

RAILWAY

TRACK *and* STRUCTURES

September 1954

One of Five Specialized Railway Age Publications

Peak PERFORMANCE...

E-CONVENTION
NUMBER

This Issue . . .

Programs of
the Conventions

Box-Acre Roof
raised 1 Ft

Mechanical Track
Laying Operation

New Vibratory
Production Tamper

Short Line Fills
22 of Its 60 Bridges

Contents—
page 43

FORMERLY

Railway
Engineering and
Maintenance

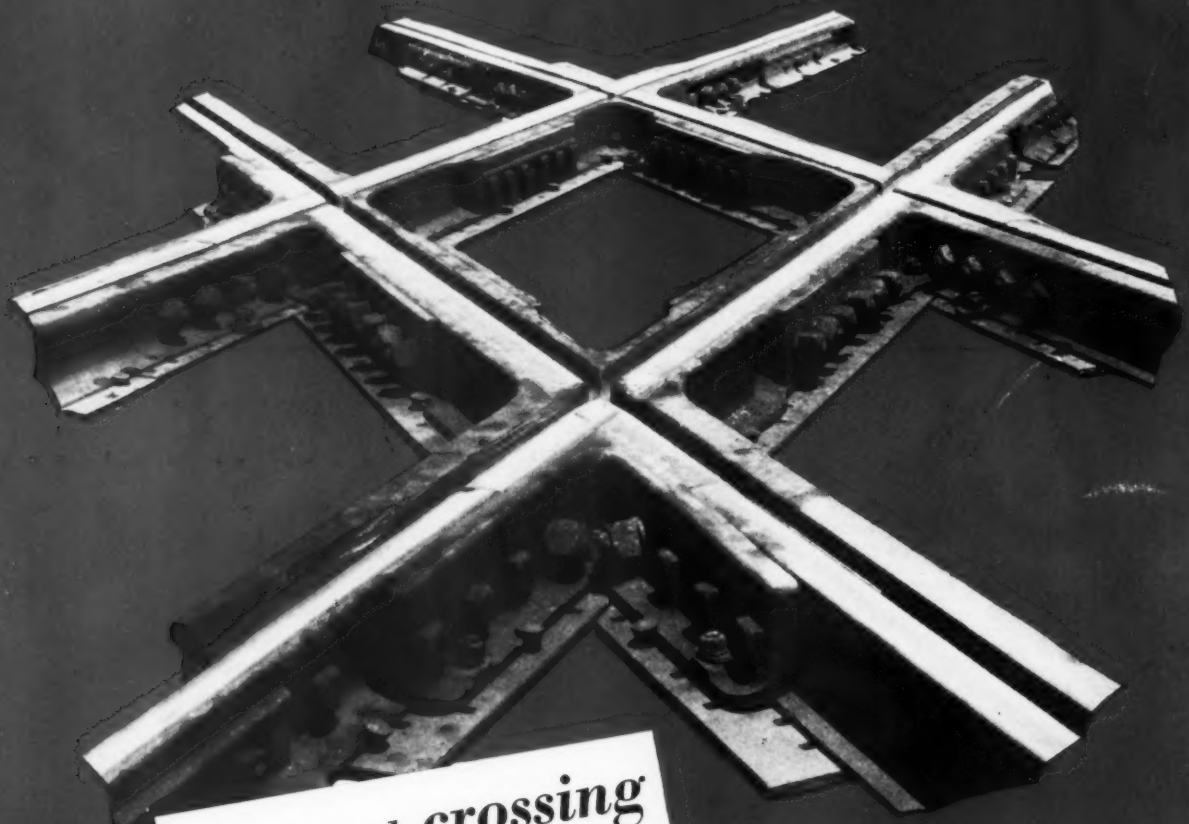


Glacier National Park in Montana provides a magnificent scenic background for the Great Northern's crack "Empire Builder."

THE RAIL JOINT COMPANY, INC.

50 Church St., New York 7, N.Y.

Muscles of steel keep these crossings tight



frog and crossing

Reliance HY-CROME® spring washers

It takes well constructed "muscles" to keep bolts tight in frogs, switches and crossings especially considering the terrific beating administered by two, and sometimes three way, high speed traffic. That is why so many railroad maintenance men are realizing the advantages of using **Improved Reliance Frog and Crossing HY-CROME® Spring Washers**. They have been especially designed and manufactured to withstand the pounding through built in reactive range and pressure great enough to "take it" no matter how great the strain.

Another advantage of these improved spring washers is the wide bearing surface to insure proper contact of the larger crossing nut. In addition, the ground deflected ends make reapplication possible without scoring contacting parts. Write for a call from one of our fastening engineers.



Send for Engineering Bulletin R-53. It will be mailed to you without obligation.



RELIANCE DIVISION



MANUFACTURING COMPANY

OFFICE and PLANTS: 601 Charles Ave. MASSILLON, OHIO

SALES OFFICES: New York • Cleveland • Detroit • Chicago • St. Louis



Special Steels



Spring Lock Washers



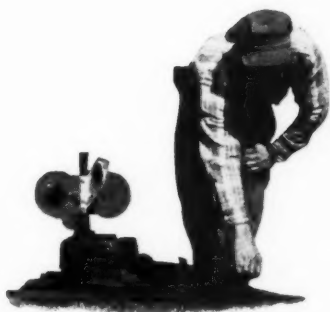
Hot-Fast-Nuts®

San Francisco • Montreal

The Inside Story...



shows why the New Century is so easy to throw



If you've ever thrown a switch with a New Century Model 51, you've probably decided that this is the easiest-working switch stand you've ever handled.

What makes it so easy? Some com-

plicated design, involving dozens of working parts that can get out of order? Not at all! Model 51, on the contrary, has a bare minimum of working parts, and is famous for its operating economy.

To get at the answer, let's remove the top and look inside. The key to easy throwing is the gap (1) between the top and the adjustment shim bolthead (2) and the spindle lug (3). This gap provides "play," so that when the operator lifts the lever through its first 30 deg of travel, he is actually lifting the weight of the lever only. By the time the slack is taken up, and the switch points be-

gin to move, he has built up enough momentum for smooth and easy completion of the movement. No climactic heave is needed.

Ease of operation is a prime feature of the New Century, but by no means the whole story. A Bethlehem engineer will be glad to discuss the other advantages. He's available through the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation.

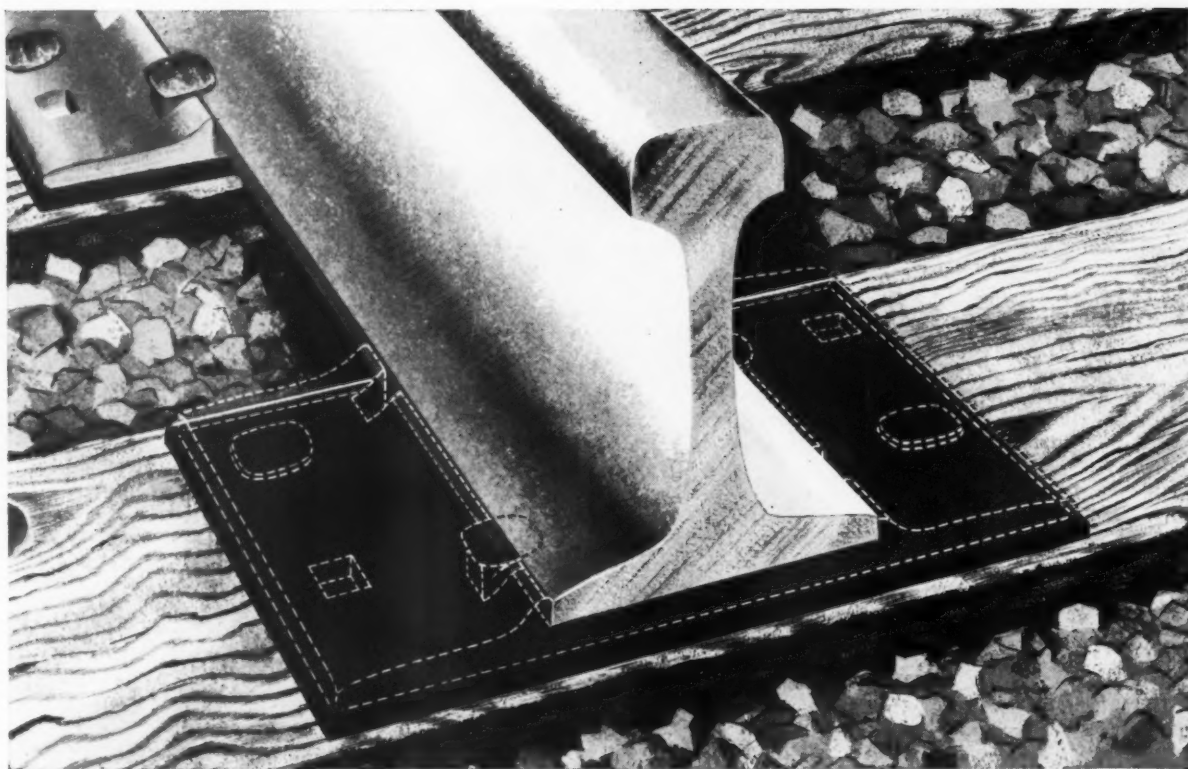
Export Distributor: Bethlehem Steel Export Corporation



New Century Switch Stand

Published monthly by Simmons-Boardman Publishing Corporation, 79 W. Monroe St., Chicago 3, Ill. Subscription prices: to railroad employees only in the United States and Possessions, and Canada, one year \$2.00; \$3.00 for two years. Single copies 50 cents. Entered as second-class matter January 20, 1933, at the post office at Chicago, Ill., under the act of March 3, 1879, with additional entry at Bristol, Conn. Volume 50, No. 9.

How to keep ties from dying young in trouble spots



Prevent cutting and abrasion by cushioning track structures with Johns-Manville Tie Pads



Johns-Manville Tie Pads provide benefits that warrant consideration in every track program. Designed to prolong tie service life, these Pads reduce "pumping," help track spikes stay tight longer, postpone maintenance expense for regauging and respiking.

J-M Pads absorb impact shock, help isolate the transmission of noise and vibration. Resilient, they serve as durable protective cushions, seal out dirt and moisture, prevent abrasion and cutting.

Formulated for low compressibility, high recovery and low plastic flow, J-M Tie Pads offer good resiliency and flexibility over the widest temperature ranges encountered in service. They are resistant to creosote, diesel and lubricating oils, brine, water and freezing and thawing.

Available in all standard sizes, J-M Tie Pads are furnished plain, or with a special coating on one side. For detailed information on Tie Pads or other Johns-Manville products, get in touch with your J-M Representative, or write Johns-Manville, Box 60, New York 16, N. Y.



Johns-Manville

**96 YEARS OF SERVICE
TO TRANSPORTATION**



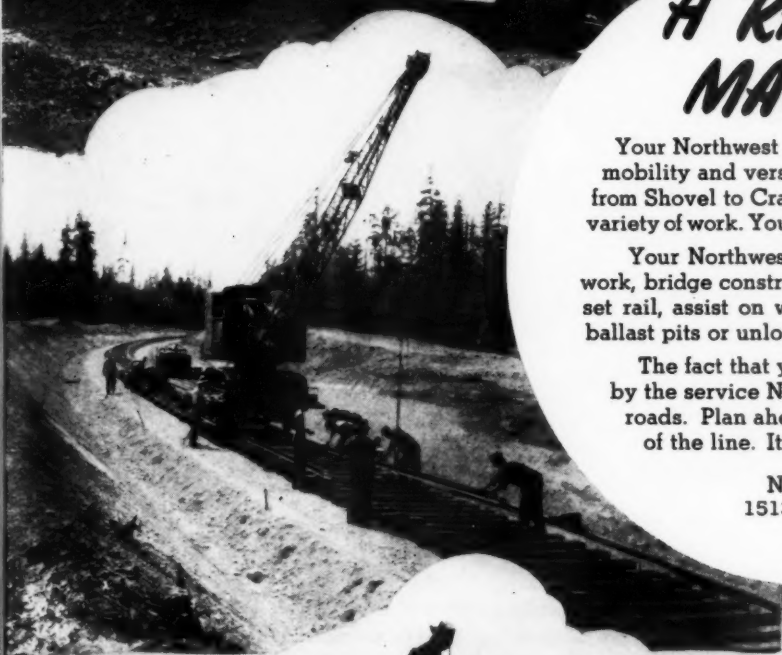
A RAILROAD MAN'S MACHINE

Your Northwest does things no track type machine can do. Its mobility and versatility made possible by its easy convertibility from Shovel to Crane or Dragline, permits scheduling it on a wide variety of work. You'll complete jobs you couldn't get finished before.

Your Northwest will handle bank trimming, ditching, magnet work, bridge construction, pile driving and storeyard work. It will set rail, assist on wrecking work, dig lead-off ditch, work in the ballast pits or unload and load material.

The fact that your Northwest is a railroad man's rig is proved by the service Northwests are giving many leading Class I Railroads. Plan ahead now to have a Northwest on every section of the line. It means better operation at lower cost.

NORTHWEST ENGINEERING COMPANY
1513 Field Bldg., 135 South LaSalle St., Chicago 3, Ill.



**DOES
THINGS
NO TRACK-TYPE
RIG CAN DO**

NORTHWEST

THE ALL PURPOSE RAILROAD MACHINE
SHOVEL • CRANE • DRAGLINE • PULLSHOVEL



A fast solution to a common ditching



The problem which Toledo, Peoria and Western Railroad had on their mainline near East Peoria, Illinois, is as old as railroading itself.

The tools they used to solve it did such a good job, though, the story is well worth telling.

Near East Peoria, the T. P. & W. line cuts through a 1600' hill. Water from rain-fed springs constantly seeps out and flows down the slope. As long as a drainage ditch stays open, the water runs harmlessly alongside the tracks and off into the fields beyond. Very often, though, the ditch fills up with dirt. Or, it gets blocked by small landslides. The water then collects, seeps into the roadbed and siphons up under the tracks. The roadbed becomes springy and unstable. Ballast starts to settle and ties tend to rot in the saturated material.

T. P. & W.'s solution was to bench the hill and provide a secondary drainage ditch. Instead of handing the 15,000 yard job over to a work train crew, T. P. & W. turned it over to Contractor Roy Frietsch who drove in 2 rubber-tired D Tournapulls. These units do the same work as crawler-tractors and scrapers, only they need no train service and they do jobs much

faster. Their top speed is 28 mph, not 4, 5 or 7 mph. Their low-pressure tires do no damage to tracks and ties. They drive anywhere under their own power — along right-of-way, over high-ways, or across country.

Though on some jobs these 7-yarders self-load, here they were push-loaded for maximum production in heavy blue clay. In typical operation, each unit loaded with help of 93 hp crawler at east end of cut, hauled 1600' through cut, and wasted material 700' further down the track. Units then turned, drove 700' back to west end of cut, loaded with help of second crawler (76 hp), drove through cut again, and wasted material in another area. Due to narrow width of bench, units could not pass each other. No turn-around areas could be built, so cycle times were slowed considerably. Yet, job was completed in less than a month at low cost and with minimum manpower. The wet roadbed and danger of landslides was ended.

It will pay *you* to call on LeTourneau-Westinghouse machines for similar fast low-cost dirtmoving. Let us arrange a demonstration on your line so you can judge the high-speed, electric-control D Tournapull for yourself.



FREE . . . "The Railroad Handyman"

20-page book shows how 7-yd. self-loading D Tournapull cuts time and costs on right-of-way maintenance. Send coupon for your free copy. No obligation.

Name Title
Railroad

LeTourneau-Westinghouse Company
PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

ing problem

How figure-8 cycles speeded the job



With 76 hp tractor pushing, D Tournapulls loaded first at west end of cut, heading east. Average load in tough, water-saturated blue clay: 5 to 5½ bank yards. Load time: about 1 minute.

Once loaded, Tournapulls drove east along 1600' of finished bench. Positive power steer let units haul safely at high speeds, even though bench and "D's" were about the same width.

After driving over bench, then 700' along right-of-way, Tournapulls reached one dumping area, the low spot shown at right. Unit unloaded here, turned, and drove back to east end of cut.

At east end of cut, a 93 hp tractor push-loaded the "D's" with 5 to 5½ bank yards of sticky blue clay. "D's" at times self-loaded efficiently when pushers were busy or down for repairs.

Now the loaded Tournapull headed west along the bench to complete 2-load cycle. Bench is so narrow, the two machines could not pass each other.

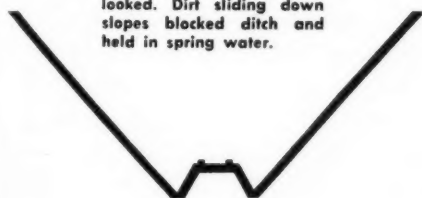
To spread at this end of cycle, Tournapull had to climb 150' of steep grade. 122 horsepower, plus high-traction tires, pulled rig easily up the slope.

Load dumped, machine turns around, goes down the grade, drives to west end of cut, positions for loading — and the two-load, two-turn cycle begins anew.

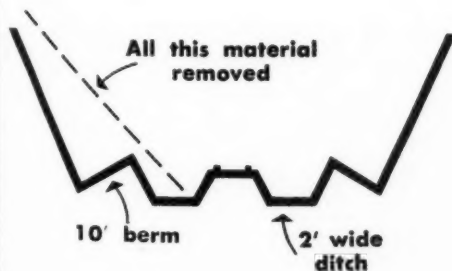
Tournapull—Trademark Reg. U.S. Pat. Off.
DP-596-RR



This is how cut originally looked. Dirt sliding down slopes blocked ditch and held in spring water.

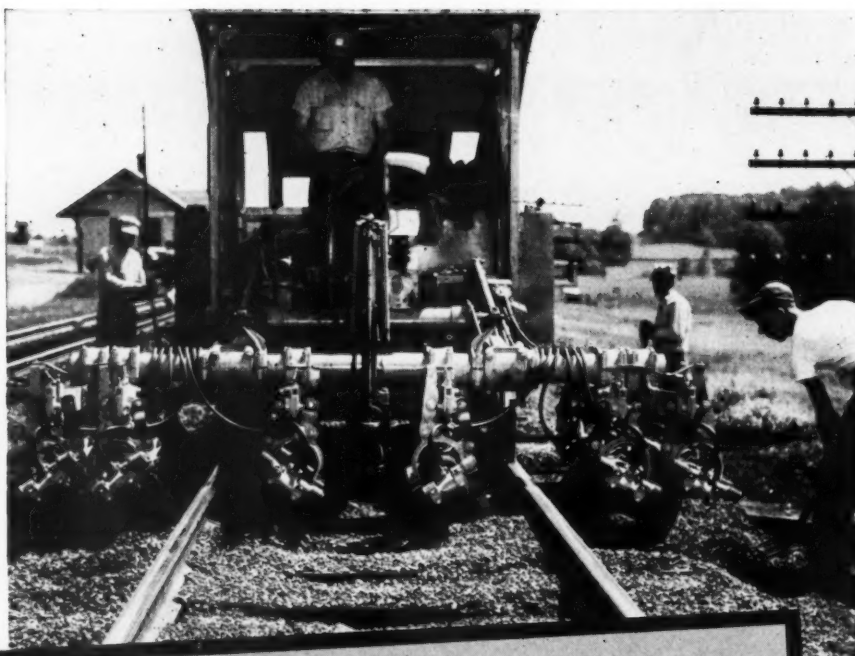


All this material removed



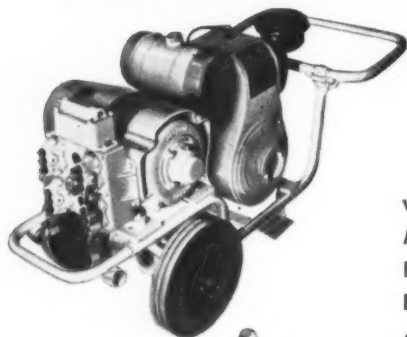
Ditching along the 1600' cut was handled in 3 steps. First, a dozer made a rough cut along the tracks. Then a trench hoe knocked down part of the bank to provide path for scrapers. Tournapulls removed loosened material, then dug into bank to provide final grade. Scraper yardage totaled about 15,000 cubic yards.

*Actual
Experience
Indicates:*

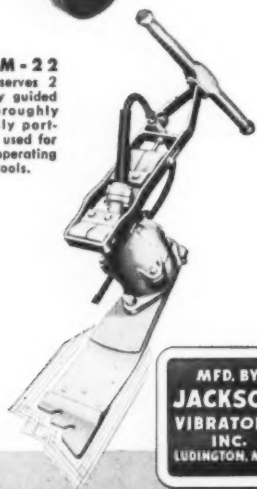


The Soundest Recommendation for
Securing **FINEST TRACK** at **LOWEST COST**

is **JACKSON**
TAMPING EQUIPMENT!



MODEL M-22
Power Plant serves 2
to 4 manually guided
tamper. Thoroughly
reliable. Easily port-
able. May be used for
lighting and operating
other power tools.



MFD. BY
JACKSON
VIBRATORS
INC.
LUDINGTON, MICH.

THE EXPERIENCE gained by upwards of 60 leading rail-
way systems and contractors LEAVES NO ROOM FOR DOUBT — the Jackson
Multiple Tamper is unrivaled for uniform and speedy tamping of track in all
lifts from the highest to those no lower than the average size of ballast used.
Furthermore, initial cost and machine maintenance costs are far less than for
any other on-track tamper. Any thorough investigation will indicate the wisdom
of including it in your recommendations for '55.

JACKSON manually guided Tie Tamper and Power Plants
— IDEAL for low lift and smoothing work with small gangs using 2 to 4 tamper
— EXCELLENT for major ballasting or out-of-face operations since 2 or more of
these 4-tamper outfits may be grouped as required. VERSATILE — quickly
interchangeable blades adapt tamper to handle every job at peak efficiency.
For top quality track and maximum economy, include these outfits in your '55
recommendations.

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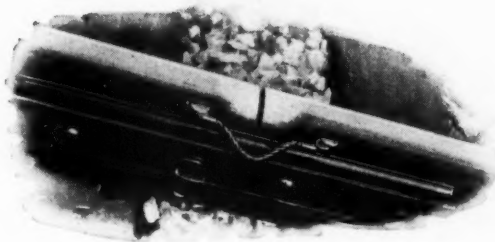
ELECTRIC TAMPER & EQUIPMENT CO.
LUDINGTON MICHIGAN

CANADIAN REPRESENTATIVES: MUMFORD, MEDLAND, LTD., WINNIPEG, MANITOBA

WHAT ARE YOUR REQUIREMENTS FOR END-HARDENED RAIL



Adequate Hardness?
Desired Toughness?
Correct Hardness Pattern?
Best Depth of Hardness?



*You get all these with
OXWELD'S methods for oxy-acetylene
rail-end hardening*

OXWELD's methods of flame-hardening are backed by 15 years of experience. During that time millions of rail ends have been treated by this tried-and-tested method.

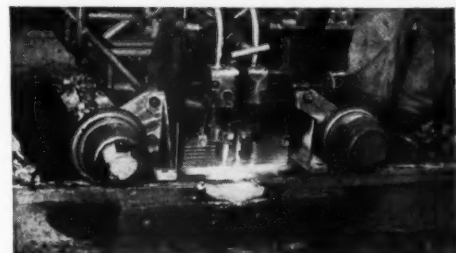
On many railroads it is standard practice to flame-harden rail ends as new steel is laid. This results in considerable savings because additional flagmen are not required and as the signal bonds are not in place it is not necessary to protect them. On other railroads the manual baffle box method has proved to be efficient, especially for small programs.

You cannot afford to overlook the proved economies of OXWELD's end-hardening methods.

Write for Booklet 7007 which details technical data on end-hardening as well as flame-hardening frogs.



Manual baffle box method of end-hardening is useful in places where traffic is dense.



Machine method of end-hardening gives high production at low cost.

OXWELD RAILROAD SERVICE COMPANY

A Division of Union Carbide and Carbon Corporation



Carbide and Carbon Building Chicago and New York

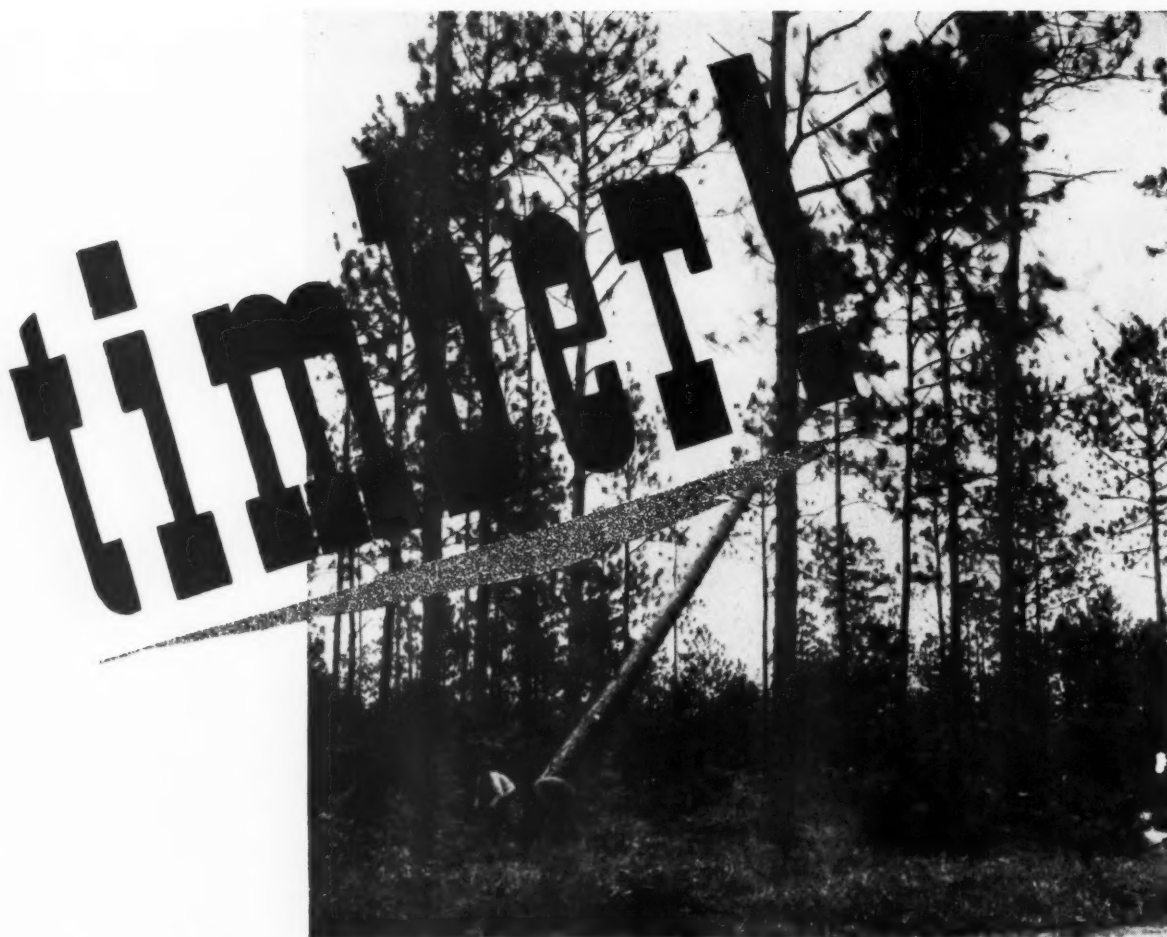
In Canada:

Canadian Railroad Service Company, Limited, Toronto



SINCE 1912—THE COMPLETE OXY-ACETYLENE SERVICE FOR AMERICAN RAILROADS

The term "Oxweld" is a registered trade-mark of Union Carbide and Carbon Corporation.



for Republic Pressure Creosoted

**TELEPHONE POLES...RAILROAD TIES...WOOD BLOCKS
LUMBER...CROSS ARMS...PILES...ANCHOR LOGS**

Selected trees that become Republic Creosoting Company's white stock are pressure treated with Creosote. These timbers become engineering structures of exacting dimensional specifications and can be counted on for years of useful service.

It is smart to order Pressure Creosoted Wood products from Republic . . . made from selected trees . . . made resistant to attack from insects and fungi.



REPUBLIC CREOSOTING COMPANY

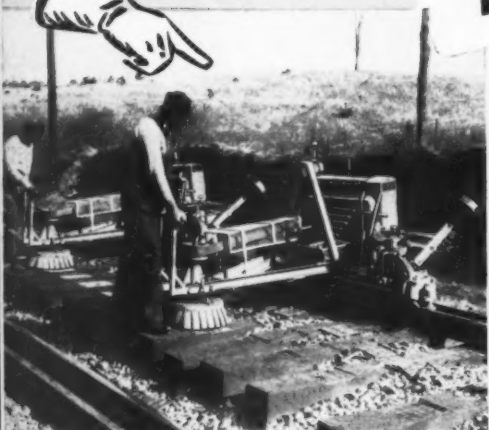
MERCHANTS BANK BUILDING, INDIANAPOLIS 4, INDIANA



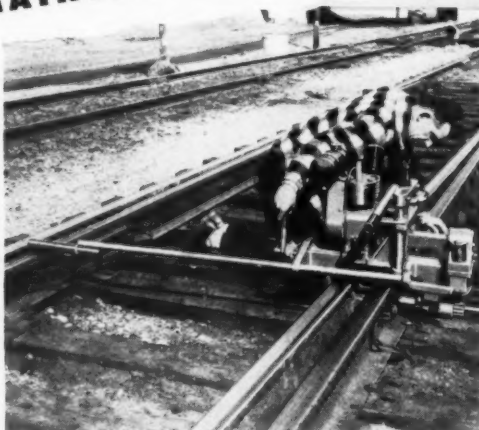
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VERONA, PA. • CHICAGO, ILL.



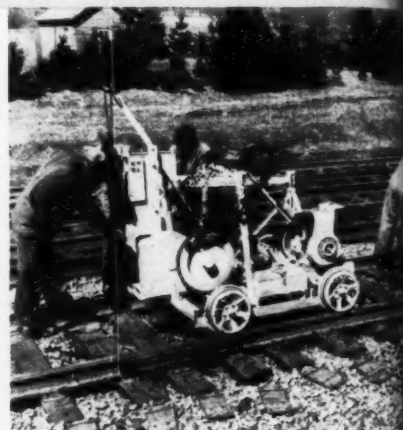
HERE ARE THE
NORDBERG
"Mechanical Muscles"^{**}
 YOU NEED TO DO A BETTER—FASTER
 MAINTENANCE JOB AT LOWER COST...



TIE SETTING MACHINE . . . Provides tie seats in keeping with today's track maintenance standards. All level and in same plane.



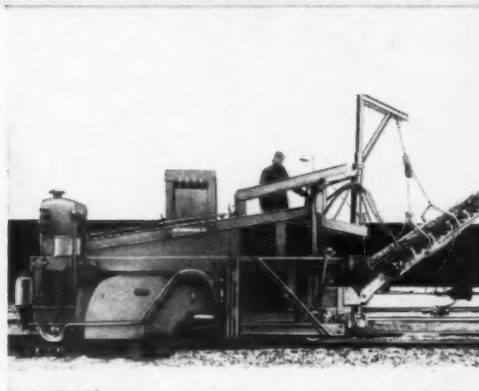
RAIL DRILL . . . A compact, lightweight, low-cost easily set drill that proves a money saver.



SPIKE PULLER . . . By pulling spikes fast machine speeds up relaying and reduces cost of the entire operation.



GANDY—TIE PULLER and INSERTER . . . A triple-purpose machine for pulling ties—inserting ties—and as a material handling crane.



DSL YARD CLEANER . . . Cleans more track faster, better, more economically . . . without damaging ties.



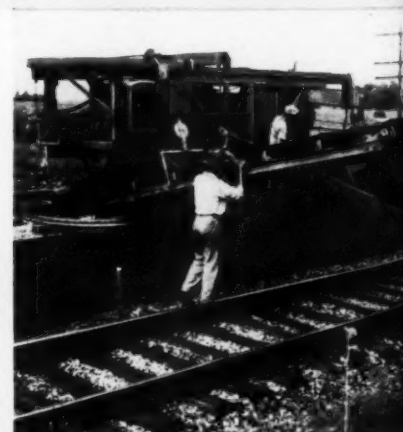
CRIBEX® . . . Removes material contained in cribs and deposits it beyond the ends of the track.



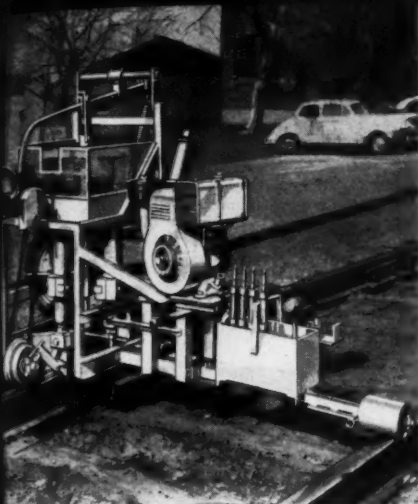
TRAKLINER . . . one of the latest Nordberg developments. A self-contained, self-propelled unit to do a faster, more accurate track lining job at lower cost.



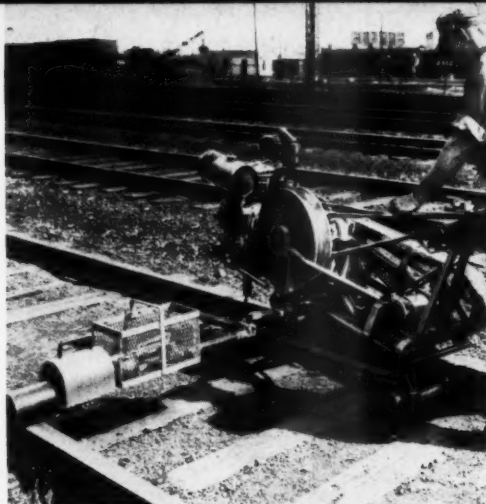
BALLASTEX® . . . Excavates the ballast in area between tracks or in shoulder. Disposes of it by wasting or by feeding to SCREENEX for cleaning.



SCREENEX® . . . Takes excavated fouled ballast from BALLASTEX, cleans material and returns it to track, intertrack, or shoulder.



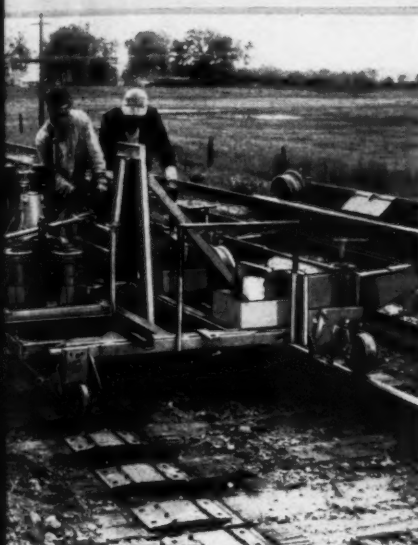
TIE DRILL . . . Saves time and money by drilling two holes at once.



POWER WRENCH . . . Provides uniformly controlled tightening on track bolts to prolong rail life and make better riding track.



POWER JACK . . . Maintains alignment while speeding up ballasting and general surfacing operations.



DUN-RITE GAGING MACHINE . . . for extremely accurate gaging by correctly positioning the tie plates.



SPIKE HAMMER . . . All spikes driven straight with big savings in time and money.



BALLAST ROUTER . . . Removes high crib ballast ahead of Adzlers in a rail job—cuts a flat trench and sweeps the ties.



NORDBERG, for more than a quarter century, has been the leading manufacturer of dependable track maintenance machinery. Designed, built, and proved in use with the cooperation of track maintenance men . . . this equipment has actually revolutionized maintenance methods in scores of operations. Most important, experience has proved that these maintenance operations can be done *better, faster and at lower cost* . . . through the use of Nordberg "*Mechanical Muscles*."*

It will pay you to investigate the full line of modern, money-saving Nordberg track maintenance machinery for meeting today's maintenance needs.

For further details on any or all of these Nordberg machines, write for literature.

*Trademark

NORDBERG MFG. CO.
MILWAUKEE, WISCONSIN



R653-R2

it's never
too late
for

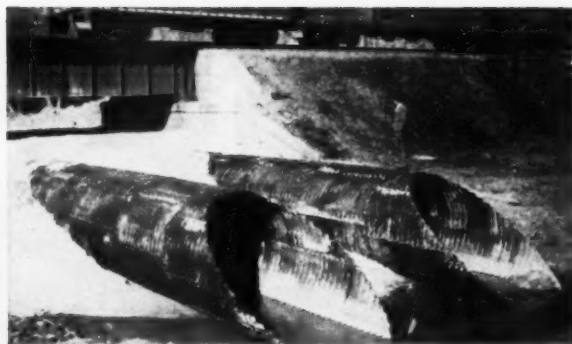
Armco Drainage Structures

You gain utmost economy by making the original installation with Armco Drainage Structures. But plenty of savings are still possible when you use these structures for lining failing bridges and masonry culverts, widening roadbeds by extending existing structures, or replacing costly obsolete trestles.

There is almost no limit to the drainage or bridge problems that can be solved by an Armco Drainage Structure and an earth fill. Armco Pipe or Pipe-Arch supplies the necessary waterway area and required strength. The rest of the job is simply a matter of enough earth fill to make the proper grade.

Assembly offers no problem. The Armco MULTI-PLATE Structures are shipped ready for bolted assembly at the job site. Long lengths of Standard Corrugated Structures are joined by simple coupling bands. Backfilling can follow immediately.

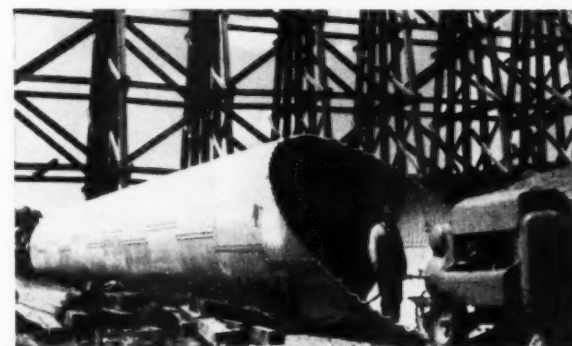
Armco MULTI-PLATE Structures, as well as the smaller Corrugated Metal Pipe and Pipe-Arch, are available in a wide range of sizes to meet every railroad drainage need. Write us for factual data. Armco Drainage & Metal Products, Inc., 1294 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.



Extending fill widths



Original installation



Replacing old trestle



Lining failing structure

ARMCO DRAINAGE STRUCTURES



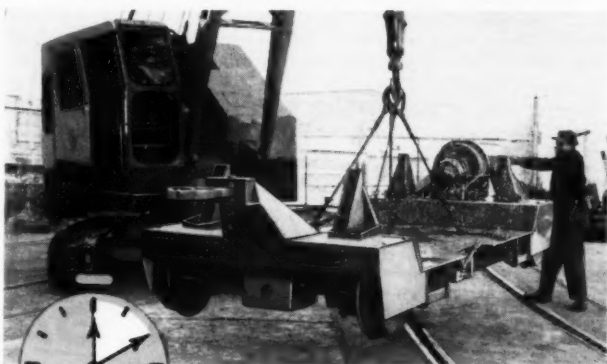


Koehring RailAid powers its own rail propulsion car . . . travels job-to-job at rail speeds up to 20 m.p.h. Overhead clearance is low . . . 10 ft.-11 in. from top of rails. Maximum width (at crawlers) only 9 ft.-8 in.

ON or OFF-TRACK in *10 minutes* with Koehring RailAid®



Propulsion car is ramp-equipped. To unload crane from car, operator disengages a universal coupling and drives crane down ramp.



Crane lifts its propulsion car off the track . . . clears the right-of-way for uninterrupted rail traffic. Entire loading or unloading operation takes less than 10 minutes!

Koehring heavy-duty RailAid combines all the advantages of a self-propelled track crane with the flexibility of a free-moving, off-track crawler crane. The crane works on or off the propulsion car . . . safely lifts 6.9 tons on the car . . . 8.9 tons on the ground.

RailAid travels at rail speeds up to 20 m.p.h. forward and reverse . . . is self-powered through extended lower traction shaft of crane and universal coupling on rail propulsion car. Crane loads or unloads itself on ramp-equipped car in less than 10 minutes. It sets car on and off-track . . . clears the rails for normal traffic. Work of crane and the road crew is uninterrupted during the complete shift.

Usefulness is unlimited . . . RailAid loads and unloads materials in yards and along the line, lays rails, places timbers and trusses on bridge construction and repairs, speeds scrap handling and salvage. Readily converts to magnet crane, pile driver, clamshell, dragline, ½-yard shovel or hoe.

K455RTS

KOEHRING COMPANY, Milwaukee 16, Wis.
Send us more information on Koehring RailAid.

NAME

TITLE

COMPANY

DIVISION

ADDRESS

(Subsidiaries: JOHNSON • PARSONS • KWIK-MIX)





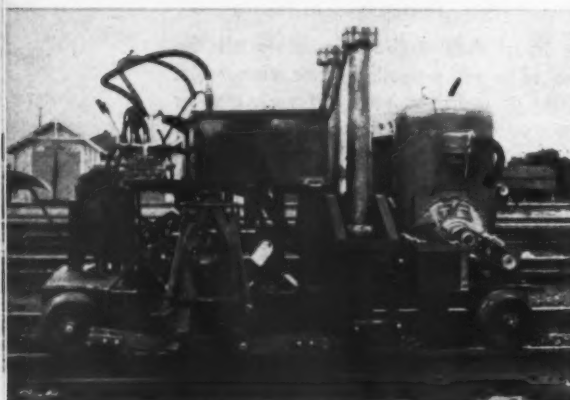
BALLAST REGULATOR, SCARIFIER AND PLOW

Does Work Of 10 To 30 Men—Monthly Rental \$350
Most versatile machine on market. Scarifier saws, regulates, shapes, and dresses ballast shoulder. Plow regulates, distributes and removes excess ballast in center of track.



TRACK BROOM

Does Work Of 10 To 15-Man Gang—Monthly Rental \$275
Sweeps cinders, slag, stone, ore and other car drippings onto conveyor, or places between track for loading into car or trucks. Also used to remove loose ballast between rail after track is surfaced.



TIE REPLACER

Does Work Of 8 To 12 Men—Monthly Rental \$250
Raises rail and removes ties in one operation and places new tie in another operation.



TRACK CRANE

Does Work Of 6 To 8-Man Material Gang—Monthly Rental \$129
Used to pick up and redistribute ties for replacement. Also in bridge gangs for handling bridge material.

RAILROAD

ANOTHER PROGRESSIVE

PURCHASE THE KERSHAW

Whatever your trackwork maintenance problem may be, Kershaw Manufacturing Co. can solve it at tremendous savings to you with the revolutionary new plan offered on any Kershaw machine.

For example, there's the lease plan with a money-back guarantee of satisfactory performance. It's the answer to declining revenues without capital expenditures.

Or, if you prefer to buy, you can purchase the complete Kershaw Line pictured on these two pages for only \$53,655.

THE COMPLETE RECONDITIONING LINE — BALLAST REGULATOR, JACKALL, TRACK CRANE, TRACK BROOM AND TIE REPLACER — COSTS ONLY \$47,625!

KERSHAW MANUFACTURING COMPANY, INC.
MONTGOMERY, ALABAMA

MACHINERY RENTAL AGREEMENT

In consideration of the mutual agreements herein contained, the undersigned lessor does hereby let and lease to the undersigned lessee for the term and under the agreements herein provided, the machinery herein described, and the lessee agrees to pay rental thereon and otherwise perform as herein set out.

1. The machinery is described as follows:

2. The term of the lease shall begin on the date the machinery is delivered to the carrier in Montgomery, Alabama, who shall be the agent for the lessee, and said term shall end three years from that date. The date shown on the receipt for the machinery issued by the carrier shall be final evidence as to the date of the beginning of said term. All transportation and delivery charges both for shipment to the lessee and for return to the lessor at the end of the term shall be payable by the lessee and any such charges prepaid by lessor shall be promptly reimbursed by the lessee. The lessee shall return the machinery in good repair, reasonable wear and tear excepted, and in the event the savings do not pay the rental and operating costs.

3. The lessee covenants with the lessor that the machinery is free from defects resulting from defective material or workmanship and lessee will, upon request by lessor at any time within the term of said lease, ship to lessor free of charge the necessary parts to remedy any such defects and also reimburse lessor for the expense of installing said parts, provided the amount thereof is first submitted to and approved by lessor. Lessee agrees at its own expense at all times during the said term to maintain said machinery in good repair, reasonable wear and tear excepted, and to promptly replace worn or broken parts against said machinery. Lessee shall be fully responsible to lessor for the safety of said machinery and be responsible for loss or destruction of the machinery caused by fire, theft, collision, upset, lightning, storm or any other cause whatever, whether within the control of the lessee or not, and such loss or destruction shall not in any way relieve the lessee of the obligation to pay all the rental herein provided for when the same is due.

4. Lessee agrees to pay the lessor, or its order, of the First National Bank, P. O. Box 511, Montgomery, Alabama, per month payable in advance and starting on the date of the beginning of the term as hereinafter provided, and monthly thereafter. In event of default in the payment of any installment and if said default shall continue for ten days after written notice by registered mail postpaid and addressed to the lessee at the address hereinafter shown, lessor may at its option either declare all remaining rental installments due and payable and shall have the right to collect all of said remaining installments and all other rights available to a lessor under the laws of any state having jurisdiction, or immediately terminate this lease and repossess the machinery. As against the obligation to pay said rental installments, lessor waives all right of demand, presentment, and notice, except as stated, and agrees that in event of default it will pay all costs of collection, including a reasonable attorney's fee of at least fifteen percent of the amount then due or matured.

5. This rental agreement is made at Montgomery, Alabama, and shall be construed under the laws of that state.

IN WITNESS WHEREOF, the parties hereto have caused this instrument, to be executed in their respective

behalfs by persons lawfully authorized thereto, on this _____ day of _____, 19____

KERSHAW MANUFACTURING COMPANY, Inc.

By _____ As its _____ Lessor

By _____ As its _____ Lessee

Address of lessee is _____

OLD EXECUTIVES . . .

**YOUR TRACK MAINTENANCE EQUIPMENT
PAY FOR IT WITH SAVINGS!**

ONE STEP BY KERSHAW!

KERSHAW LINE OUTRIGHT

THREE PLANS

1. Three-Year Lease — Lease Kershaw machines for three years.
2. Six To 12 Months Rental With Option To Purchase — Lease a Kershaw machine for six to 12 months. Any time during that period you can purchase the machine with 90 per cent of rentals applying to the purchase price.
3. Outright Purchase.

The Railroad Company may return the machine during the first 30 days rental period in the event the savings do not pay the rental and operating costs.

TOTAL RENTALS

For the Ballast Regulator, Track Crane, Tie Replacer and Jackall — all equipment necessary for track reconditioning except the multiple tamper—only \$1,006 per month.*

**COMPARE THIS FIGURE WITH WHAT YOU'RE PAYING NOW
FOR THE SAME JOB!**

*Based on Three-Year Lease rentals

KERSHAW

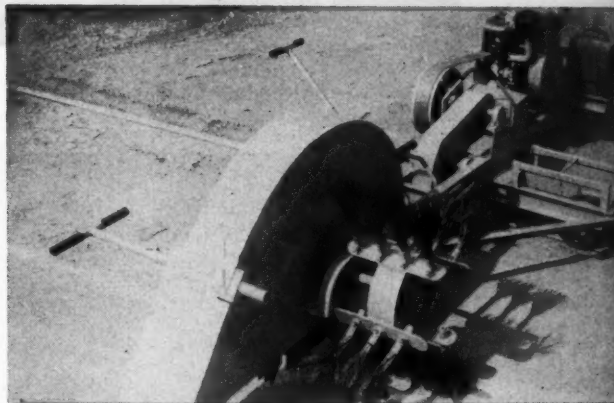
TRACK EQUIPMENT LEASE



Kershaw Mfg. Co., Inc.



Montgomery, Ala.



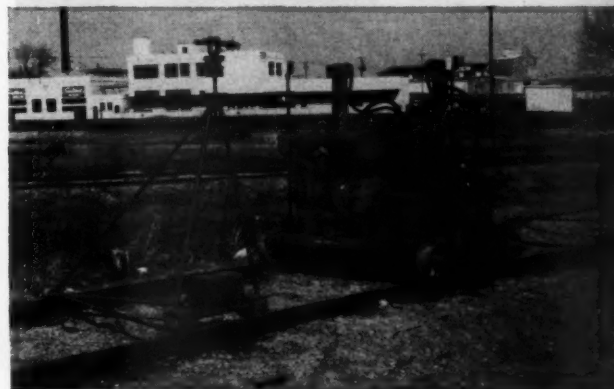
KRIBBER

Does Work Of 6-Man Gang—Monthly Rental \$66
Used in relaying operations to clean out ballast between ties ahead of tamping machine. Also used with attachments to skeletonize track with rails in place.



JACKALL

Does Work Of 12-Man Jacking Crew—Monthly Rental \$530 for Super Jackall; \$277 For Intermediate Jackall
Used in track surfacing gangs. Takes place of all hand jacks normally used in raising track.



HYDRAULIC JACK

Does Work Of 6 To 8 Men—Monthly Rental \$129 for Super Jack; \$90 for Standard Jack
Used in surfacing gangs where particularly high raises are required. Takes place of jacking crew.

In each and every bearing, we match rollers to almost microscopic limits

NOT satisfied to finish rollers to extremely close tolerances, Timken Company engineers designed the special machines you see pictured below. They sort rollers into even more precise sub-sizes so we can match the rollers in *each* and *every* bearing to almost microscopic limits. Result: each roller carries the same

load, assuring quieter operation, longer life.

This is typical of the many extra steps we take to give you more for your money than any other bearing manufacturer. In fact, only with Timken® bearings do you get *all* these advantages: advanced design, precision manufacture, rigid quality

control, special analysis Timken steels. The end result is that every Timken bearing insures longer life, reduces friction and cuts maintenance costs to a minimum.

Whether you're buying or building machinery, specify Timken bearings. Or if you're replacing bearings, insist on Timken tapered roller bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".






This symbol on a product means its bearings are the best.



TIMKEN
TAPERED ROLLER BEARINGS



NOT JUST A BALL  NOT JUST A ROLLER  THE TIMKEN TAPERED ROLLER 

BEARING TAKES RADIAL  AND THRUST  LOADS OR ANY COMBINATION 

ATLANTIC COAST LINE Keeps Defects Small, Costs Low with Sperry Rail Service



"We make sure of sound rails by testing certain segments of track with a Sperry Detector Car as many as three or more times annually," comments Mr. Groover. Fast, modern service that paces competition, typified by ACL's *Champion*, demands sound rail in track. Sperry Rail Service has played an important part in building up the outstanding safety record achieved by Atlantic Coast Lines in recent years.

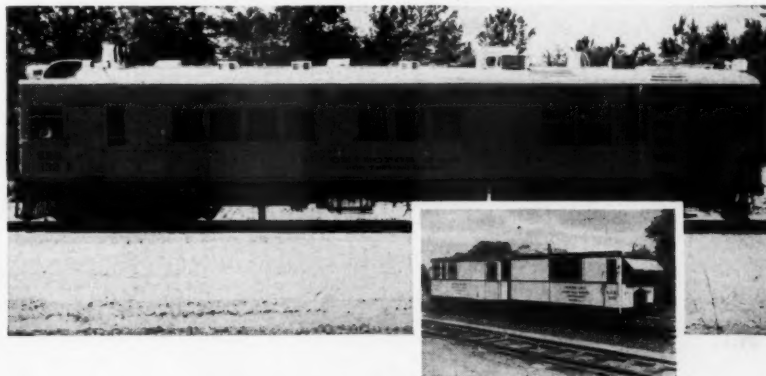


"We try to locate transverse defects while they are small, before rapid or sudden growth has started," says Mr. R. L. Groover, Chief Engineer, Atlantic Coast Line. "Sperry test results speak for themselves. During 1953, 92% of the transverse defects located were small (0% — 20%)."



"Sperry coordinates the needs of the railroads in our area and, working with all of us, helps plan a group test," explains Mr. Groover. "This provides for proper testing frequency of all territories, and benefits all of us by eliminating expensive nonproductive time."

Sperry Rail Service is pledged to anticipate modern rail inspection requirements...with the most advanced equipment continuing research and engineering can provide...with the service and understanding of your needs which only experience can assure. Your inquiry concerning any rail-testing problem or other application of nondestructive testing will receive prompt and considered attention.



Sperry Rail Service on the Atlantic Coast Line dates back to 1930 when the early Type A Double Unit Detector Car (inset) was new. Modern testing equipment, like Detector Car No. 132 with its thoroughly trained crew, is a vital part of controlled rail maintenance so necessary under today's highly competitive demands for greater speeds and heavier loads.

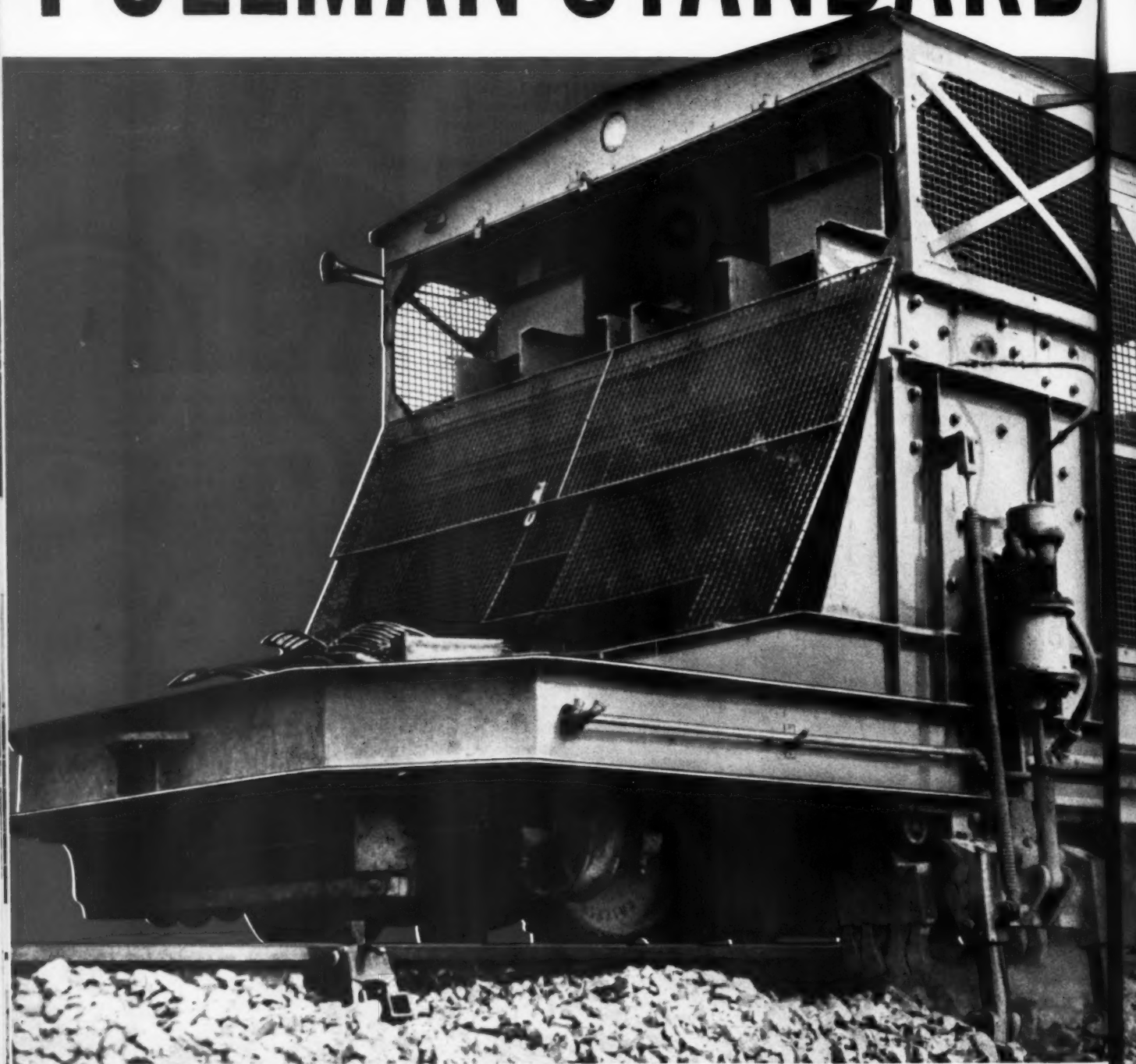


SPERRY RAIL SERVICE

Division of Sperry Products, Inc.
Danbury, Conn.

New York Chicago St. Louis

PULLMAN-STANDARD

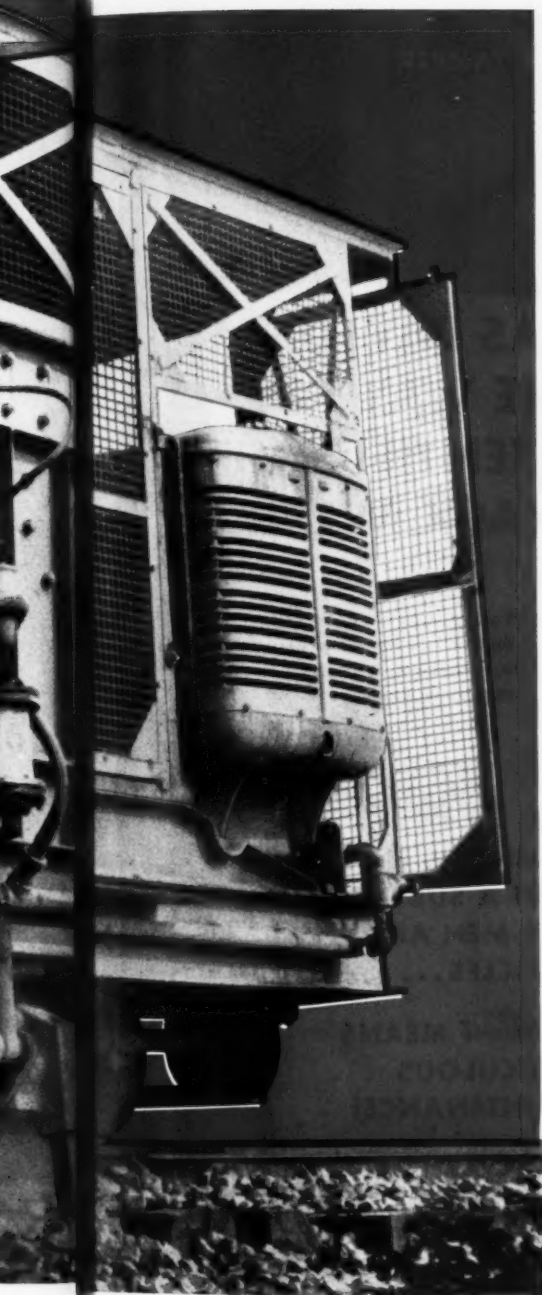


Power Ballaster—With a production rate of 500 to 700 feet an hour, a Pullman-Standard Power Ballaster run by a single operator, can be efficiently manned by a crew of 10 to 15 men. Case history studies made on 16 railroads prove that this unit will give more feet of finished tamped track per hour, with less labor and maintenance, than any other production tamper.

Power Cleaner and Winch Car Team—Both track shoulders can be cleaned simultaneously at 1000 to 1200 feet per hour with only four men. Even in multiple track territory, cleaning to eight to ten inches below the tie base is at this high rate and low labor complement. Your ballast cleaning costs can be reduced by as much as 50%.

Power Cribber—The Pullman-Standard Power Track Cribber gives you two to three cribs a minute, with a single operator. With a normal production rate of 150 to 400 track-feet per hour, its interchangeable 4-, 5-, and 6-inch digger tips enable it to crib efficiently and economically in any type of ballast, regardless of cementation.

D POWER BALLASTER



- tamps 500 to 700 feet per hour
- efficiently manned
by 10 to 15-man crew
- low maintenance requirements
- has triple-action compaction
- proved in service
on 30 railroads

If you are interested in better, faster, lower cost mechanized track maintenance, get *all* of the facts about Pullman-Standard Track Equipment. Then compare, feature for feature with any other. Write or phone the Pullman-Standard office located nearest to you.

YOUR NEEDS CREATE THE PULLMAN "STANDARD"

PULLMAN-STANDARD

CAR MANUFACTURING COMPANY

SUBSIDIARY OF PULLMAN INCORPORATED

79 EAST ADAMS STREET, CHICAGO 3, ILLINOIS

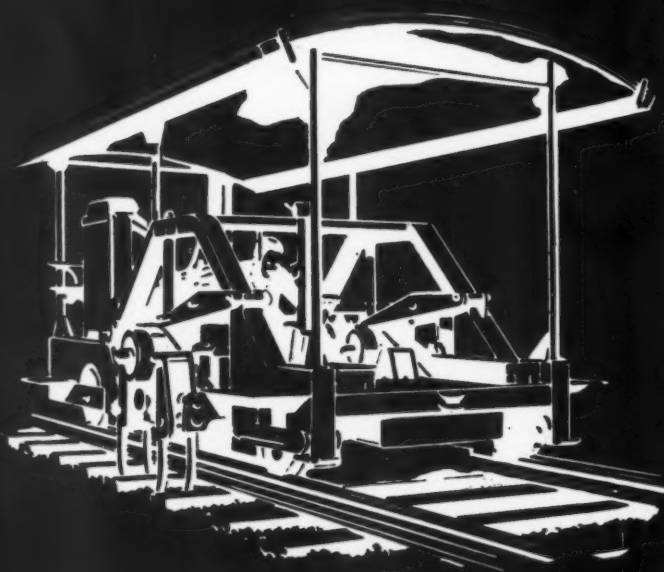
BIRMINGHAM, PITTSBURGH, NEW YORK, SAN FRANCISCO, WASHINGTON

why

IN JUST A FEW YEARS HAS ONE TAMPER
OUTSOLD ALL OTHERS
BY A HUGE MARGIN?

BECAUSE

Matisa



THE

Matisa

EQUIPMENT CORPORATION

TRACKWORK SPECIALISTS ALL OVER THE WORLD

224 South Michigan Blvd. • Chicago 4, Illinois

HAS PAVED
THE WAY FOR
SCIENTIFIC
TRACK WORK

Today...as yesterday
Matisa still means pre-
cision-tamped track at
the same price.

THE *Matisa*
TAMPER IS NOT
JUST A SUBSTITUTE
FOR MEN AND
MUSCLES...

Matisa MEANS
METICULOUS
MAINTENANCE!



NEWS NOTES...

SEPTEMBER, 1954

...a resumé of current events throughout the railroad world

Net income of Class I railroads after interest and rentals totaled \$224 million for the first six months of this year as compared with \$418 million in the first half of last year. Thirty-one railroads failed to earn interest and rentals in the first six months.

The Gulf, Colorado & Santa Fe will begin construction soon of a 50.1-mile branch from its main line near Sanger, Tex., to a point on its Paris-Dallas line near Reinhardt. The new line, which is scheduled for completion by the end of 1955, will give the Santa Fe a shorter and more direct route into Dallas from the north.

Measured in terms of gross ton-miles of cars, contents and cabooses, freight traffic handled by diesel-electric locomotives amounted to 83.35 per cent of the total hauled by Class I railroads during the first four months of 1954. This compares with a figure of 73.58 per cent for the comparable period in 1953.

A complete mechanical refrigeration system for railroad reefers, which has been under development for a number of years, will be offered in the near future by the Waukesha Motor Company.

The first cargo of iron ore to be shipped from new mines in Labrador and Quebec arrived recently at the Pennsylvania's new \$10-million ore pier at Philadelphia aboard the S.S. Hawaiian. The shipment, amounting to about 20,000 tons, marks the largest single ore shipment ever to reach Philadelphia and coincided with the official dedication of the new pier.

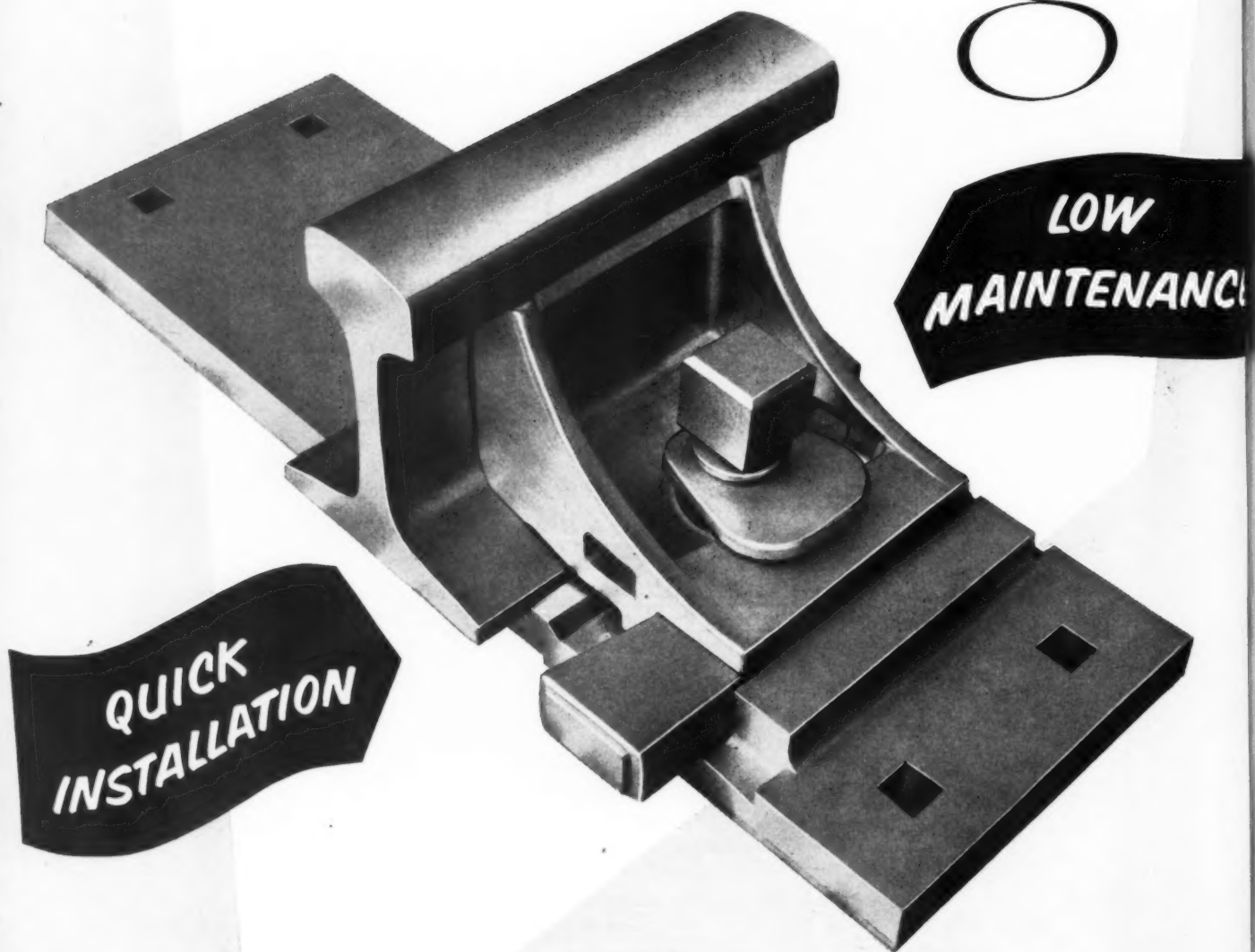
The Northern Pacific reports that nearly sixty miles of continuous welded rail will be in service on its main line before the end of the summer. This would make the NP second only to the Elgin, Joliet & Eastern as the country's leading user of continuous welded rail. The EJ&E, at last report, had approximately 90 miles of such rail in main line service.

Radio communication on 669 miles of its main line between Texarkana, Ark., and Toyah, Tex., has recently been realized by the Texas & Pacific with the installation of 12 fixed wayside radio stations. These stations provide train-to-wayside and station-to-station radio communication. Freight trains operating in this territory are also equipped with radio for end-to-end communication.

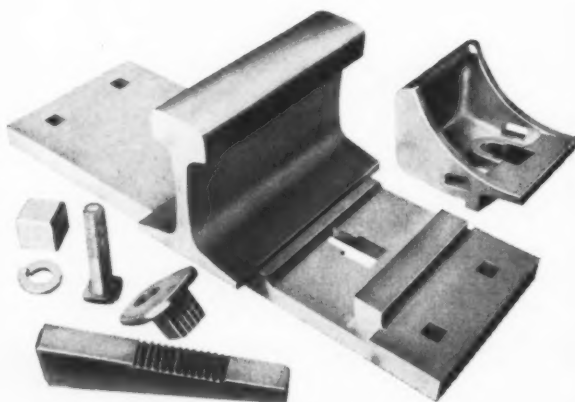
Maintenance-of-way employees on the Toledo Peoria & Western now have their own monthly publication. It is called "The Progressive Wayman," a name which utilizes the road's initials. The magazine lists departmental activities, procedural changes and general news, and is printed on a regular office reproduction machine under editorship of the secretary to chief engineer.

The United Railroad Workers of America, representing approximately 40,000 non-operating employees of the Pennsylvania under union-shop agreements, and the Transport Workers Union of America, with a membership of about 110,000, principally employed on rapid transit, street car and bus lines in New York City, plus a large membership among air line employees, have announced plans of amalgamation. Both unions are affiliated with the CIO.

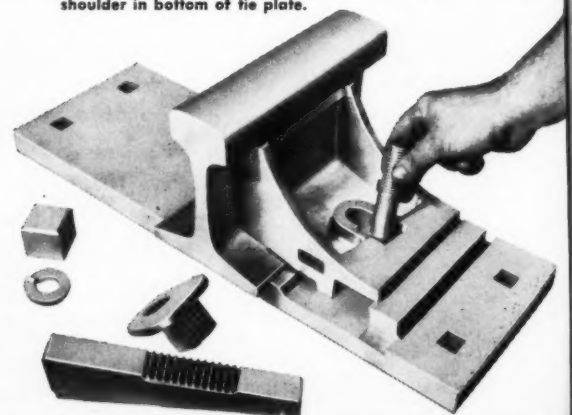
Introducing...



1. Assembly takes place after the rail is seated on the plate and plate has been spiked to the tie.



2. Brace is snugly fitted into the fishing of the stock rail. Bolt is then inserted from the top with the head down, moved in toward the rail until bolt head is positioned and held under shoulder in bottom of tie plate.



The New, Self-locking USS Taylor Adjustable Rail Brace

THE new Taylor Adjustable Rail Brace offers advantages found in no other rail brace. Combining the simplicity of good design with rugged construction, it insures sturdy rail support — takes the repeated side thrusts of heavy, fast traffic without loosening, thus maintaining track gage and alignment.

Installation is quick. Rail, tie and plate need not be disturbed. And once installed, the USS Taylor Adjustable Rail Brace is *locked* in position. Even if the cap nut becomes loosened, the locking plate with its serrations interlocking those of the wedge will continue to hold the wedge in the proper position. The bolt serves

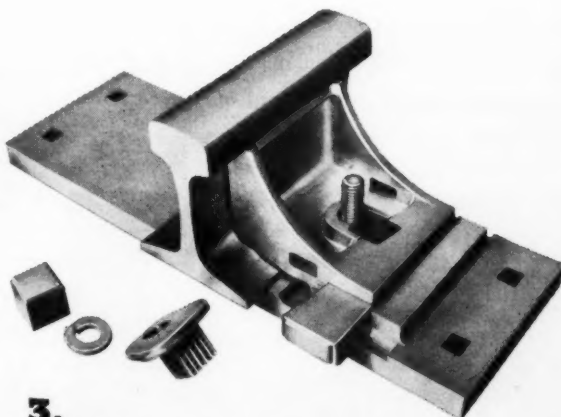
merely as an anchor for the locking plate plug, while the cap nut and shielded locking plate protect the bolt threads against corrosion.

Maintenance on this type of brace is rarely necessary The efficient design of the Taylor Adjustable Rail Brace results in less wear, a minimum of adjustment and longer service life. When adjustment is required (due to wear), the locking plate plug is simply lifted and the wedge tapped in with a hammer.

For further information, write to United States Steel Corporation, 525 William Penn Place, Room 4420, Pittsburgh 30, Pennsylvania.

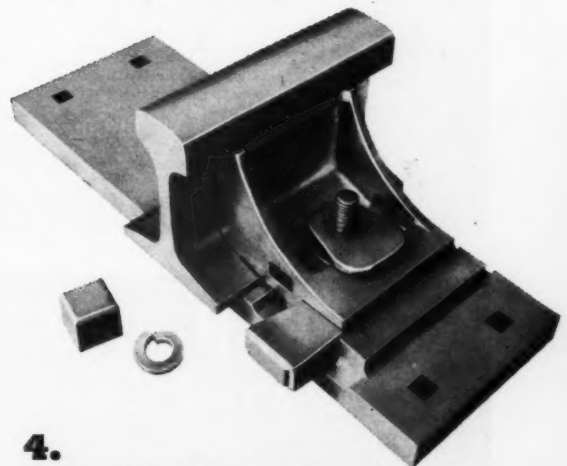
UNITED STATES STEEL CORPORATION, PITTSBURGH • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS TRACKWORK



3.

Wedge is then driven tight with its serrations facing the rail. Opposite side of wedge is inclined to fit the undercut face of the stop block.



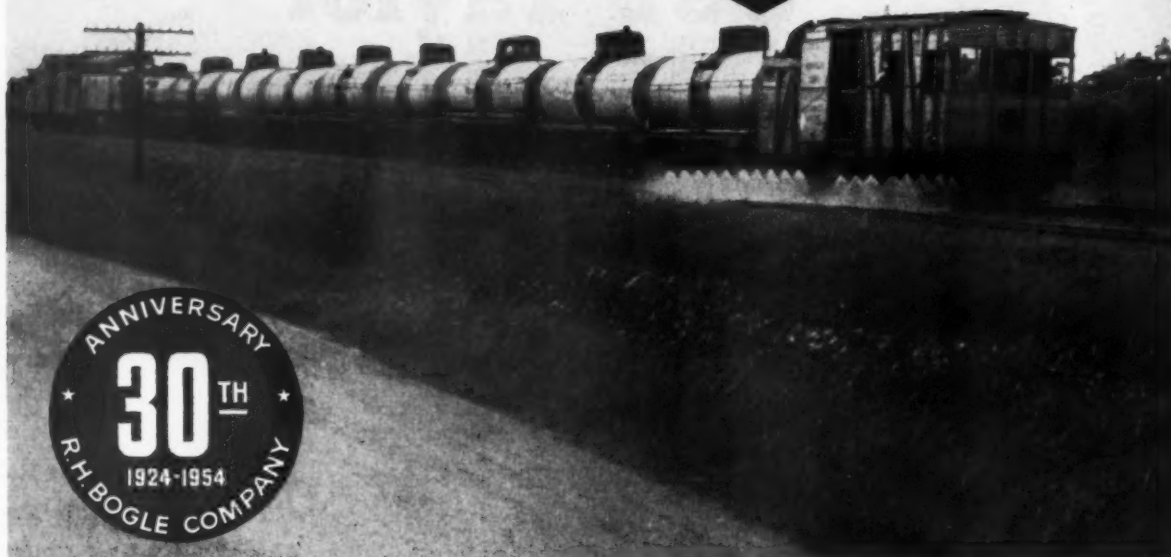
4.

Locking plate plug is dropped on bolt and into hole in brace. Serrations on outer face of plug engage those of the wedge, while inner smooth face of plug engages the vertical shoulders of the brace. Spring washer is then placed on bolt, and cap nut is applied and tightened.



UNITED STATES STEEL

Which Is More Economical
THIS?



OR THIS?



Every maintenance engineer knows the answer. There is absolutely no comparison in the cost of a well-conceived weed killing program and the eventual toll in poor drainage and a host of other ills that beset track taken over by weeds and grass. It has been repeatedly proved that consistent application of the *right* chemicals applied with modern equipment pays off in lowered maintenance costs—year after year, and to omit treatment **ONLY ONE YEAR**, can mean the loss of several years effort toward weed free track. That has been the experience of Bogle customers who know the advantages of using a weed and brush killing service with a record of proved results over the years.

The R. H. BOGLE Company

ALEXANDRIA, VA.

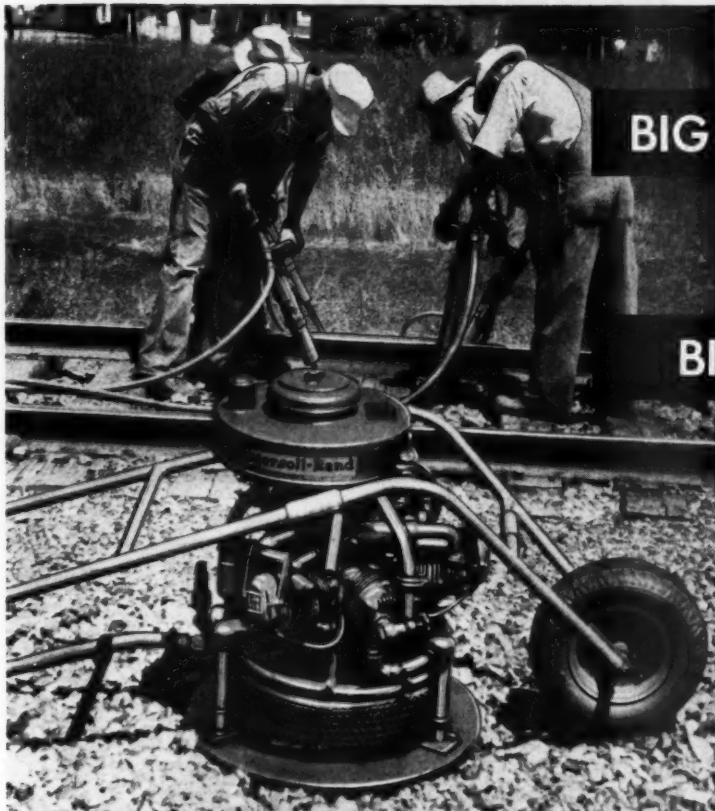
Memphis, Tenn.

COMPLETE WEED and BRUSH KILLING SERVICE



SPOT-AIR

the little compressor that does a big job



BIG IN PERFORMANCE

Operates **FOUR**
Ingersoll-Rand MT-4 Tampers

BIG IN ECONOMY

SAVES SPACE—only 32" high
on a 27" base plate

SAVES LABOR—readily moved
from one spot to another

SAVES UPKEEP—rugged
construction, minimum
maintenance

The SPOT-AIR, operating *four* MT-4 railroad tie tampers, delivers 36 cfm at 80 psi. With wheelbarrow mounting shown, one man can readily take it almost anywhere.

From its comparatively small size, you wouldn't suspect this compact SPOT-AIR Compressor could deliver so much air power so economically.

SPOT-AIR weighs only 265 lbs. It's a self-contained, single-stage, gasoline-powered compressor. Because it is completely air-cooled, you can use it in any kind of weather—without danger of freezing in winter—or overheating in summer.

With *four* I-R Type MT-4 Tampers,

the 3R-36 SPOT-AIR makes a complete air-tamping team. You'll find it saves time and improves work in practically any job where air power is applicable. For further information, see your nearest Ingersoll-Rand representative.

Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y.

AIR TOOLS

| | | |
|---------------|------------------|------------------|
| Spike Drivers | Wood Borers | Backfill Tampers |
| Grinders | Riveting Hammers | Paving Breakers |
| Impacttools | Rivet Busters | Pumps |
| Wire Brushes | Scaling Tools | Utility Hoists |

COMPLETE



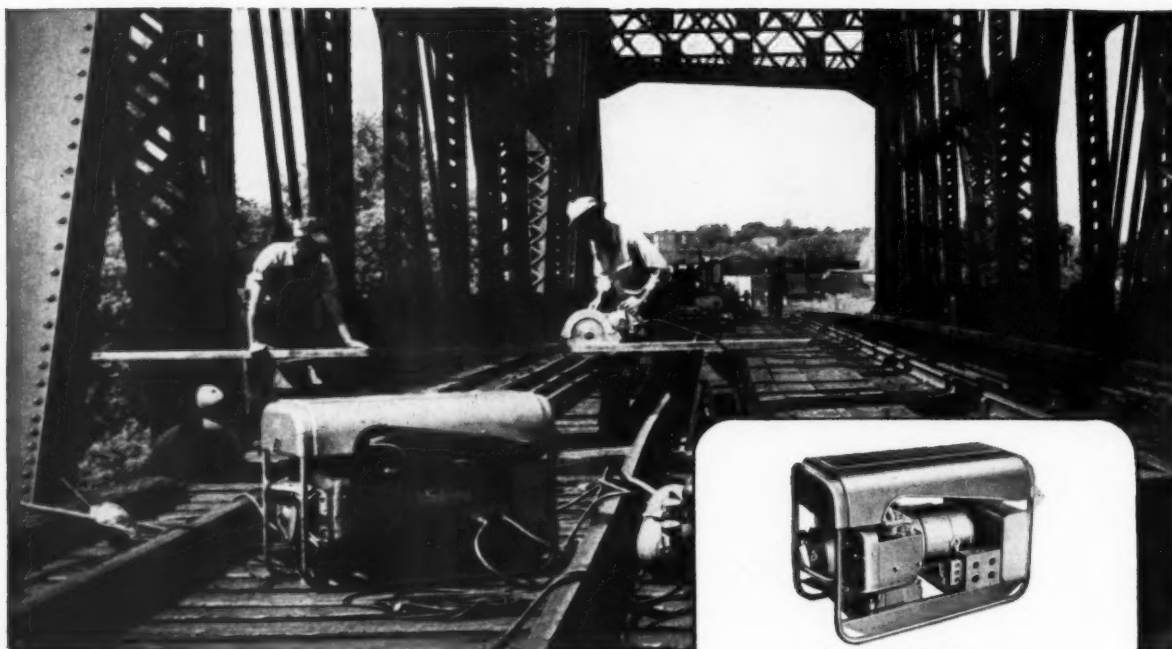
AIR POWER

TO MEET NEEDS OF ANY JOB

PORTABLE COMPRESSORS

A complete line in 36, 60, 85, 125, 210, 315, and 600 cfm sizes.

There's an ONAN Electric Plant for any railroad job!



ONAN builds more models, more sizes ...both gasoline and Diesel powered

The full range of models in the Onan line makes it easy for you to pick the right electric plant for any railroad job. Where high capacity with light weight and compactness is essential, the Onan air-cooled CK and CW series give you outstanding advantages. The Onan 10CW, for instance, delivers 10,000 watts *with half the weight and in half the space* of competitive units of equal capacity.

Where operating economy with portability is an important consideration, Onan air-cooled Diesel-powered electric plants—the 3,000-watt Model 3DSP and the 5,000-watt Model 5DRP, are your choice.

On large jobs where a continuous supply of electricity is required, Onan water-cooled gasoline and Diesel electric plants deliver up to 55,000 watts day-in and day-out.

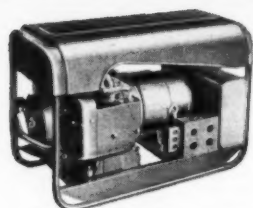
Look into the worthwhile labor savings that can be made by using electric tools powered by Onan electric plants, *on all construction and repair jobs*. You can get the work done electrically, faster and at less cost.

Write for specifications

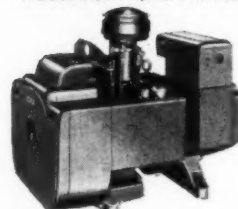


D. W. ONAN & SONS INC.

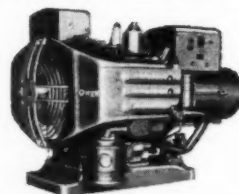
8813 University Ave. S. E. • Minneapolis 14, Minnesota



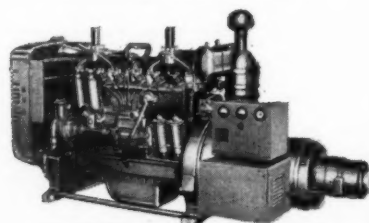
Model 5CK—5,000 watts D.C.



Model 10CW—10,000 watts A.C.



Model 5DRP—5,000-watt Diesel



Model 55DAY—55,000-watt Diesel

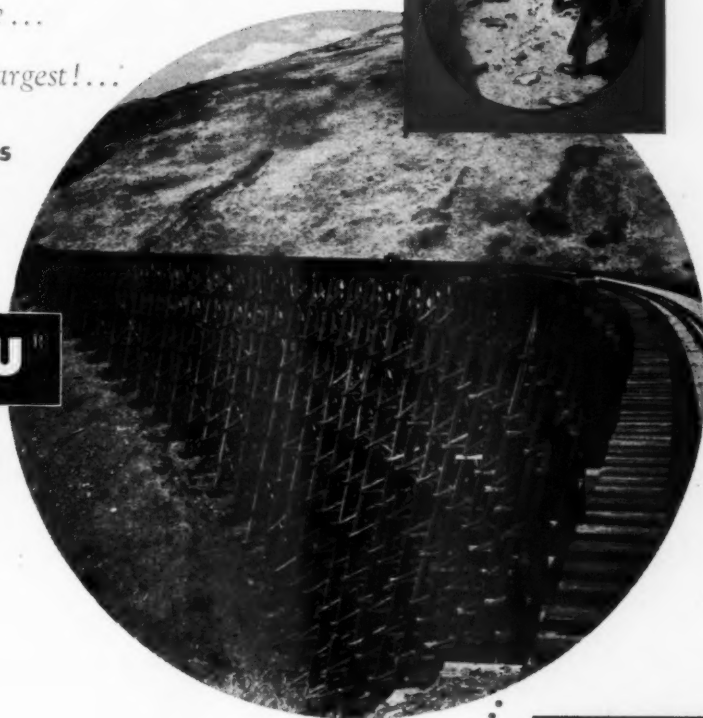
Timber Trestles Everywhere...

Including the World's Largest!...

safe from fire-hazardous
weeds and grasses
because of :

BORASCU

weed killer →

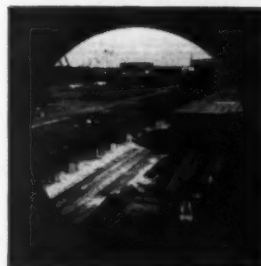


● **WHEN BORASCU'S IN...WEEDS STAY OUT!**

Weeds and grasses can't grow on ground that has been properly treated with Borascu! It destroys weeds and it stops them—that's one reason more roads use Borascu than any other weed-killer for protecting timber structures from disastrous grass and brush fires. Economy, ease of application, safety, and long-lasting results are other deciding factors for this popularity of Borascu over all others. A free demonstration of Borascu on your road, under all conditions, is yours for the asking. Write for details today!



QUICKLY APPLIED ANYWHERE



MAKES YARDS—SIDINGS SAFER



NOTHING TO MIX
NO WATER TO HAUL
NONPOISONOUS
NONCORROSIVE
TO FERROUS METALS

PACIFIC COAST BORAX CO.

DIVISION OF BORAX CONSOLIDATED, LIMITED
930 SO. SHATTUCK PLACE • LOS ANGELES 5, CALIFORNIA

SALES OFFICES LOCATED IN ALL PRINCIPAL CITIES FROM COAST TO COAST AND FROM CANADA TO VENEZUELA
RAILWAY TRACK and STRUCTURES

SEPTEMBER, 1954 27



Weeds-Grass-Brush?

We can solve YOUR weed control problems with the **RIGHT** chemicals and application service

Our complete line of proven weed, grass and brush killing chemicals includes:

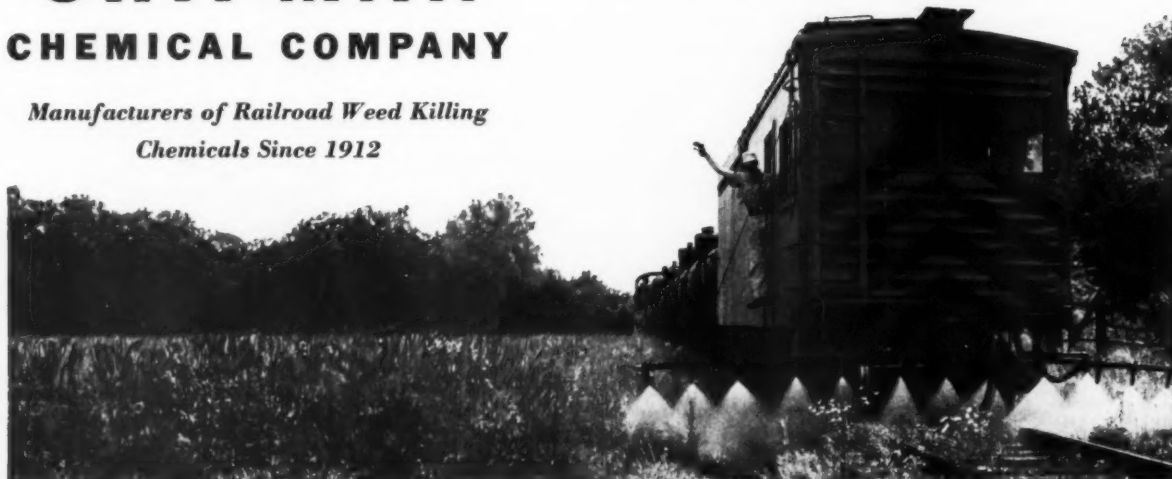
| | |
|-----------------------|---------------------|
| Atlacide Liquid | Methoxone-Chlorax |
| Atlacide Spray Powder | CMU |
| Chlorax Liquid | Brush Killer |
| Chlorax Spray Powder | Atlas Contact |
| TCA-Chlorax | Atlas "A" Arsenical |

CHIPMAN
CHEMICAL COMPANY

*Manufacturers of Railroad Weed Killing
Chemicals Since 1912*



16 Strategically Located Chipman Plants



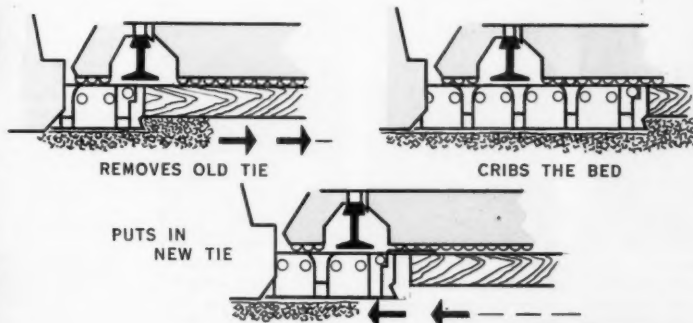
Replaces Ties at $\frac{1}{4}$ the Cost of any other method

Machine replaces ties at rate of one a minute, using only one operator and two laborers. Tie-Master removes the old tie, cribs the bed, installs the new tie. Ties may be loaded by cranes on hydraulically operated dump trailers at either end of machine to be banded in bundles and dumped clear of track.



The New R.M.C. TIEMASTER

The Only Machine
that does the
**ENTIRE TIE
REPLACING JOB**



Railway Maintenance Corporation

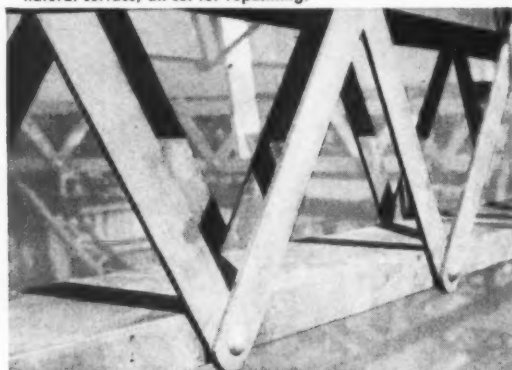
PITTSBURGH 30, PA.

DESIGNERS AND
MANUFACTURERS OF:
McWILLIAMS MOLE, SUPER MOLE
McWILLIAMS TIE TAMPER, CRIB
CLEANER, BALLAST DISTRIBUTOR
...TIEMASTER...LINEMASTER
...SPIKEMASTER

flame

**can clean this
better, faster, cheaper!**

Paint loss and corrosion like that on the steel girder above can be removed easily and efficiently. Shown below is the same girder after flame cleaning and wire brushing down to its natural surface, all set for repainting.



On rail joints, cars and structures,
AIRCO® Flame Cleaning removes
surface moisture while it cleans . . .
makes new paint last longer.

Just look at the paint-lift, scale and rust on the small section of a girder above. Now look at the inset picture to see the same girder smooth, clean, dry and ready to receive a lasting paint coat. That's what Airco oxyacetylene flame cleaning plus a simple wire brush can do on any rail joint, car or structure — and what it does better, faster and cheaper than any other mechanical method. Here's why!

Airco Flame Cleaning is better because it removes surface moisture as it removes scale rust and other extraneous matter . . . providing the best surface for a lasting job when paint is applied to the warm dry metal.

Airco Flame Cleaning is faster because only flame will cockle scale and rust so quickly, at the same time facilitating the cleaning of hard-to-get-at areas.

Airco Flame Cleaning is economical because you get longer lasting paint jobs than ever before possible with old-fashioned cleaning methods. The apparatus itself is portable and easy to handle.

If you have an overhaul job coming up, investigate Airco's flame cleaning process — there is no better mechanical method for a lasting paint job. For more information contact your nearest Airco office.



On bridges, flame cleaning removes moisture that lifts paint and oxidizes surfaces.



On cars, flame cleaning makes it easy to clean unusual contours and inaccessible areas.



On rail ends, portable, flexible flame cleaning apparatus saves time and labor on the job.

AIR REDUCTION

60 East 42nd Street • New York 17, N. Y.

at the frontiers of progress you'll find...



*Divisions of Air Reduction Company, Incorporated,
with offices in most principal cities*

Air Reduction Sales Company
Air Reduction Pacific Company

Represented Internationally by
Airco Company International

Foreign Subsidiaries: Air Reduction Canada, Limited,
Cuban Air Products Corporation



Low cost protection for insulated joints



You are looking at an expensive installation on any right-of-way. The insulation in this joint is costly . . . and when it breaks replacement costs are very expensive.

Burkart Tie Pads, installed on joint and shoulder ties of insulated joints, absorb the shock of impact and materially reduce wear and damage to the insulation. Averaging only 15% to 25% of the cost of insulation, the Burkart Tie Pads shown above are truly low cost protection.

Add this to the extra life these pads give to the ties themselves and you have a typical

example of why M/W engineers specify Burkart Tie Pads wherever track maintenance costs are high.

SEE FOR YOURSELF how rugged Burkart Tie Pads save money at other trouble spots—on bridge ties, switches, curves, even on your straightaways. Send for sample, prices or additional information. If you wish, an experienced Burkart technical representative will gladly consult with you.

All Burkart Tie Pads are coated to provide a permanent seal.

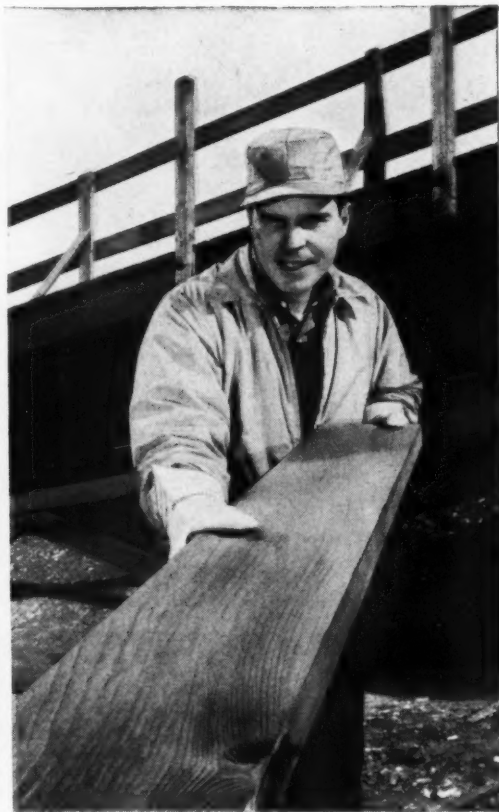
F. BURKART MFG. CO., Railroad Tie Pad Division

DIVISION OF TEXTRON, INC., 4900 NORTH 2ND STREET, ST. LOUIS 7, MO.

PENTA

IS THE CLEAN PRESERVATIVE
FOR LONGER WOOD LIFE

DOW



Chicago and Northwestern Railroad chooses PENTA-treated wood for Belmont
Station platform . . . gains *clean* protection against termites and decay

| | |
|---|------------------------|
| THE DOW CHEMICAL COMPANY Dept. PE-750G Midland, Michigan | Name _____ |
| Please send me: | Title _____ |
| <input type="checkbox"/> Plant Wood treating specifications | Company _____ |
| <input type="checkbox"/> Valuable booklet "Pointers on Penta." | Address _____ |
| <input type="checkbox"/> Sources of treated wood | City _____ State _____ |

PENTA* treatment for new wood structures pays you two-fold benefits—in longer wood life and *clean* protection.

PENTA gives positive protection against decay and termites—longer life for platforms, loading docks and car lumber. Added years of service life in all your wood construction bring big savings in repair and replacement costs.

The added benefit in PENTA is its *clean* treatment that leaves wood pleasing in appearance and easy to walk on.

Wood, always a preferred building material, is made even better with *PENTACHLOROPHENOL treatment. For more information, write to THE DOW CHEMICAL COMPANY, Midland, Michigan.

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MONDAY EVENINGS—SEE YOUR PAPER FOR TIME & CHANNEL

you can depend on DOW CHEMICALS

DOW

1931 **23 CONSECUTIVE YEARS** 1954 MODERN BALLAST CONDITIONING



BEFORE "R. B. C. C." Service



AFTER "R. B. C. C." Service

"R. B. C. C." ballast cleaning service has earned its outstanding performance record from 23 years of successful operation. Our 3 and 5 unit trains are entirely self contained on our own standard railroad equipment—No railroad cars are used or tied up.

"R.B.C.C." 5 unit equipment does a thorough ballast conditioning job, cleaning two center ditches or two shoulders or one of each at one trip.

"R.B.C.C." 3 unit equipment, self propelled, does a thorough ballast conditioning job, cleaning one shoulder at one pass on one side only.

"R.B.C.C." ballast cleaning or excavating service, complete with our own personnel and equipment, is handled on contract basis.



RAND TOWER
MINNEAPOLIS, MINN.



METROPOLITAN BANK BLDG.
WASHINGTON, D. C.





General Chemical's Railroad Weed Control Service provides the most advanced type of spray trains with specially designed spray heads to give complete control for all conditions.



Spray apparatus is designed to provide variable volume of output for greater kill where heavier weed growths are found.



Mainline weed control. Treatment covering 16-foot track section, grassline to rails.



Weed control on secondary track applying out-of-face treatment.



Brush control work. Treating long-established growth 20-30 feet outward from track.

FOR REAL WEED CONTROL USE GENERAL CHEMICAL'S CUSTOM SERVICE

**Save Time, Trouble, and Money with a
Control Program Especially Planned to Overcome
Your Particular Weed Problems**

No one herbicide can be a cure-all for the widely varying weed problems encountered by railroads from coast-to-coast. That's why General Chemical has developed "Custom Service" Weed Control . . . the only method for really effective results.

General Chemical tailors each program to meet the needs of the individual road. It uses exclusive high potency "Rite-O-Way" Brand Weed Killers, the modern herbicides which research and experience have proved most suitable for specific vegetative and climatic conditions.

Rite-o-way
BRAND

TCA-CHLORATE
(liquid concentrate)
FORMULA 7
(TCA, acid-in an oil base)
2, 4-D ADDITIVES

"Rite-O-Way" Brand Weed Killers are applied singly or in series depending upon conditions encountered. All have persistent toxic residual action. Wherever used, they have given results unequalled by old-type chemicals or by burning. Applications are made according to a carefully planned spraying schedule . . . under the supervision of General's weed control specialists using the latest techniques and specially equipped spray cars.

Time and again leading roads across the country have gotten results like these:

- Quick kill of grasses
- Quick kill of broad-leaved weeds
- High kill of persistent perennial root structures
- Suppression and control of seed germination
- Reduced amount of regrowth continually from year to year
- Control of outside root encroachment in subgrade

You can expect the same from General Chemical's carefully planned "Custom-Service" Weed Control Program. For specific information and detailed literature, write to:

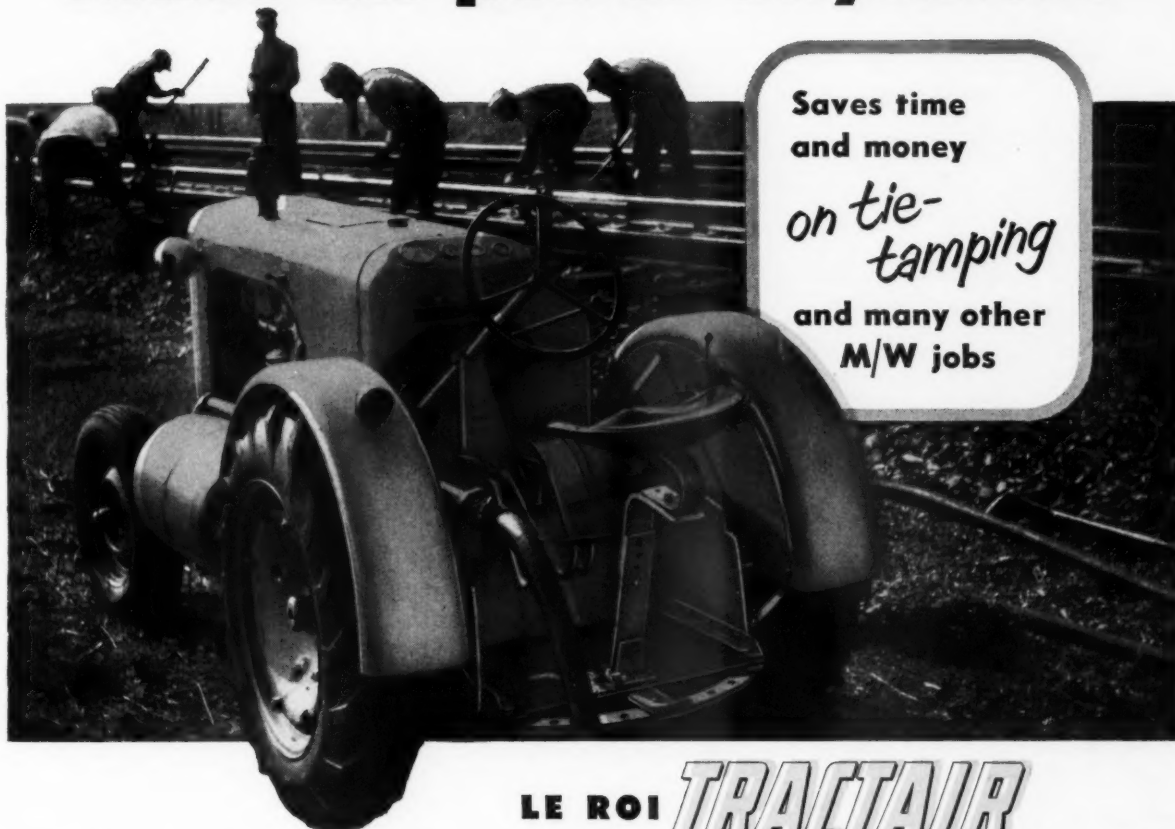


WEED KILLER DEPARTMENT
GENERAL CHEMICAL DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.



*General Chemical Trade Mark

Off-track compressor-tractor takes air power anywhere



**Saves time
and money**

*on tie-
tamping*

**and many other
M/W jobs**

LE ROI **TRACTAIR**

provides versatility for extra hours of usage

TRACTAIR'S low-cost, mobile air power lets you make more use of work-saving Le Roi-CLEVELAND air tools. For example, Tractair delivers enough air to run eight standard tie tampers — helps your section hands tamp fast and uniformly.

By using other attachments, your men multiply Tractair's usefulness. They can use it to lift, load, auger, mow, backfill, power a winch, plow snow, and do the work of other specialized equipment.

Yes, sir, this combination 105-cfm

compressor and 35-hp tractor is adaptable to many M/W jobs. It has good traction and low center of gravity—can be driven almost everywhere. It readily crosses or straddles heavy-duty rail. It climbs embankments and works on a two-to-one slope with safety.

We'd like to show you Tractair at work, so you can get a first-hand picture of its money-saving usefulness. Just write and tell us when it's convenient. And — ask for job-data sheets and bulletins.

Do all these jobs — and more — with Tractair:

Tamp ties; drive spikes.
Break pavement.
Drive mail point for grouting operation.
Do ditching, light grading, weed mowing.
Drive earth augers.
Stockpile ballast, cinders, other materials.
Handle off-season work for B&B, Signal, T&T, and Water-Service Departments.

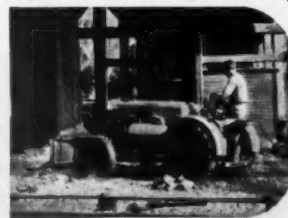
Le Roi-CLEVELAND No. 10 Tie Tamper, shown at right, weighs only 36 lbs. Section hands like it and can handle it without tiring. The work is faster and more uniform.



Tractair operates air-motor-driven auger up to 16" diameter. Hydraulic control keeps auger at desired angle. Horizontal auger also available.



Front-end loader is attached to Tractair in only a few minutes, cuts the cost of handling ballast, cinders, other materials.



A backfill blade adapts the versatile Tractair for such jobs as filling trenches, light grading, and other light dozing work.

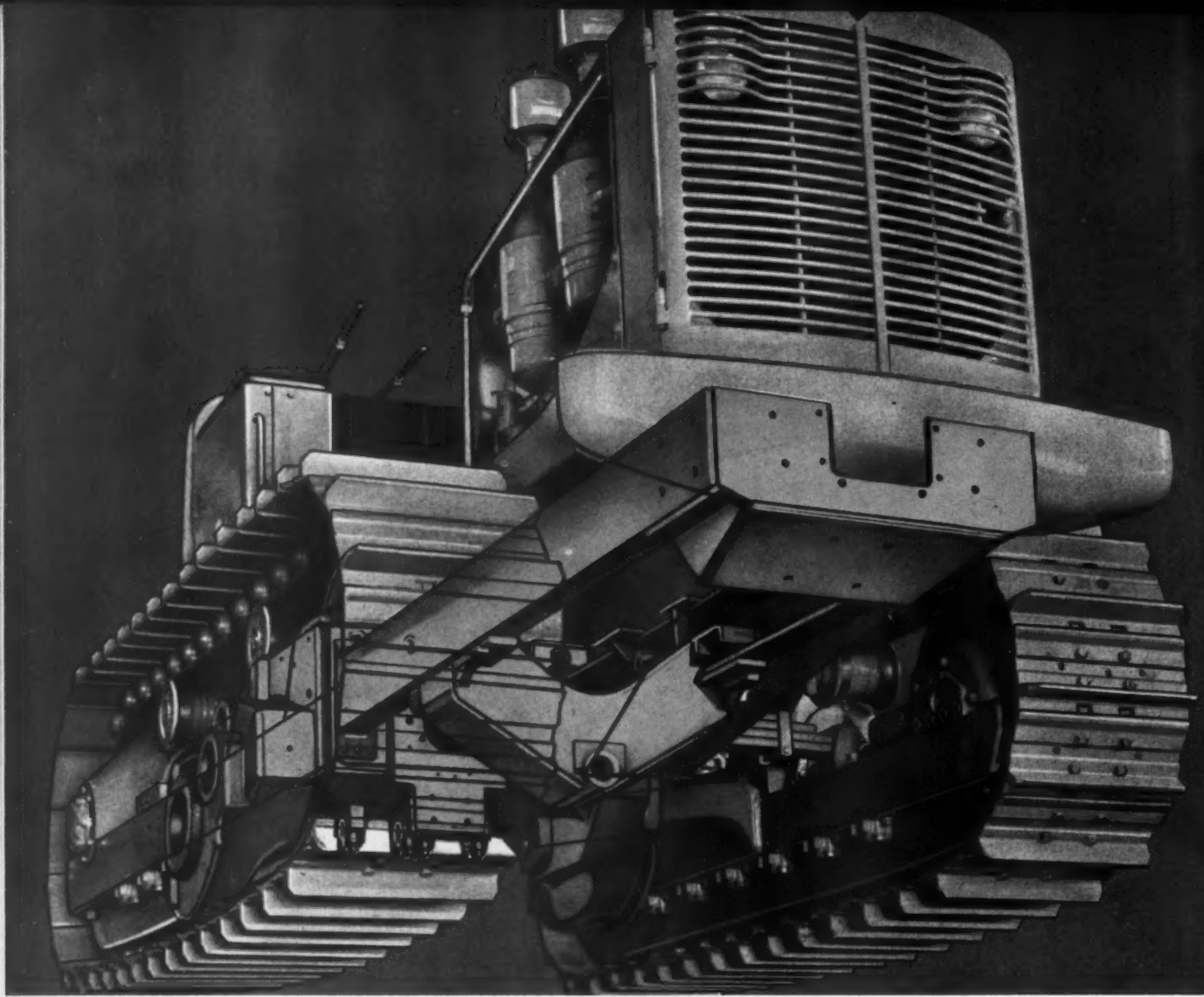


LE ROI COMPANY

A Subsidiary of Westinghouse Air Brake Co.
RAILROAD SALES DEPARTMENT

327 SOUTH LA SALLE STREET • CHICAGO 4, ILLINOIS

T-28



HOW THE MAIN FRAME CONTRIBUTES TO TOP TRACTOR PERFORMANCE

One of the big reasons why more and more Allis-Chalmers tractors are being used today is their exclusive main frame design.

These frames are one-piece, all-steel welded structural members (like the girders in a bridge or the columns in a building). They help provide greater strength and flexibility to withstand shock loads . . . make possible better equipment mounting, improved weight distribution and outstanding service simplicity.

We invite you to see these advantages . . . first at your nearby Allis-Chalmers dealer and then in a demonstration.

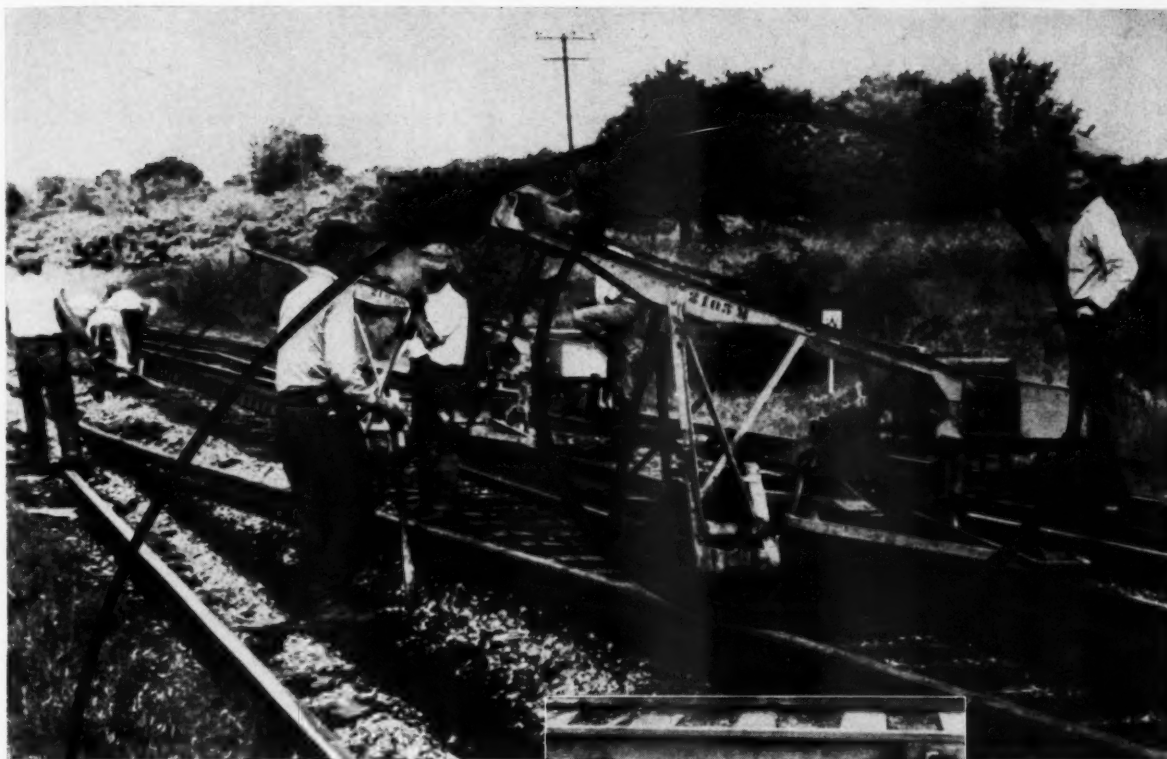
"Rolls with the Punch" — All-steel main frame flexes slightly under extreme shock loads . . . without transmitting the strain to engine, clutch or transmission.

Better Equipment Mounting — This frame's compactness provides ample clearance for equipment like front-end shovels . . . permits wide track shoes . . . improves performance of entire unit.

Improved Weight Distribution — Box A-frame allows location of main components for best over-all balance . . . putting more weight lower in tractor where it does the most good.

Service Simplicity — Since main frame carries *structural* load, power drive components can be readily removed, repaired or replaced without disturbing adjacent parts.

ALLIS-CHALMERS
TRACTOR DIVISION - MILWAUKEE 1, U. S. A.



A TREMENDOUS LIFT

FOR LAYING STANDARD or CONTINUOUS WELDED RAIL

The MECO Power Rail Layer speeds up rail laying tremendously. Manned by three men, it handles the longest, heaviest, standard rails speedily and easily.

Two or more MECO Power Rail Layers are used to speed up laying of mile-long continuous welded rail on busy divisions, usually with 3 or 4 men per Rail Layer. An adzing, jointing, gauging and spiking gang large enough to keep up with the rapidly moving Meco Rail Layers makes it possible to quickly finish up the track for normal traffic.



MACK REVERSIBLE SWITCHPOINT PROTECTORS make switch rails last eight to ten times longer.



MECO RAIL AND FLANGE LUBRICATOR greatly decreases wheel flange and rail friction, prolongs high rail life two to four times, increases safety on curves.



TYLIFE—A new treatment for spike holes—hardens the walls of the hole and bonds the spikes or tie plugs to the tie.

★ **Maintenance Equipment Company** ★

RAILWAY EXCHANGE BUILDING • CHICAGO 4, ILLINOIS

B168R

No. 309 of a series

RAILWAY **TRACK and STRUCTURES**

SIMMONS-BOARDMAN PUBLISHING CORPORATION

79 WEST MONROE STREET
CHICAGO 3, ILL.

September 1, 1954

Subject: How!

Dear Readers:

It is no exaggeration to say that much of the thinking and planning in our editorial office is dominated by the word "HOW." This word provides the basic criterion for much of the material selected for publication in our feature section. If an article can pass the "how" test it has survived the first hurdle on its way to acceptance as suitable material for the magazine.

What I am saying is that we want each article to tell you how you can handle some part of your job better. While going over the list of articles for this issue I was struck by the extent to which they meet the "how" criterion. If you read all these articles you will learn how the Milwaukee Road is getting results with a new track-lining machine; how the North Western raised the roof of its trainshed at Chicago; how the Fernwood, Columbia & Gulf is filling many of its bridges; how to inspect track from a train; how the Burlington used a newly developed production tamper; and how the Chicago & Western Indiana modernized a large coach yard.

How do we know that this formula is acceptable to our readers? We think we're on the right track for several reasons. First, it is common sense to reason that you are readers because you expect to obtain information of value to you in your work. Second, our experience has been that the articles with the strongest "how" flavor are the ones that elicit the most comments. Third, in spite of the fact that people have more to distract them today than ever before — television, movies, radio, sports, popular and semi-popular magazines — the circulation of our magazine, rather than suffering, has shown a steady gain, and a very high percentage of our readers renew their subscriptions every year.

From these indications we deduce that our readers as a whole are ambitious men, that they use the magazine as a tool to help equip them for advancement, and that articles based on the "how" formula will best serve their requirements. A concomitant aspect of this line of reasoning is that this magazine is read primarily for profit, but even so we recognize the necessity of using every means available for making the "how" information as palatable as possible.

This discussion would not be complete without reference to the "how" nature of much of the advertising. While looking at the ads in this issue why not make a mental note of those that convey "how" information of one kind or another. I think you will find that these pages and the editorial section work hand-in-hand in this respect. This is the basic formula of the specialized business publication. It has stood the test of time, and still seems pretty sound to us.

Yours sincerely,

Merwin H. Rick

Editor

MHD:lw

Members: Audit Bureau of Circulations and Associated Business Publications

7,000,000 YARDS

MOVED on Rock Island's Atlantic cut-off



Typical terrain on the route of the cut-off. Cuts up to 70 feet deep were common and mud made earthmoving difficult.

IN SEPTEMBER, 1953, the final spike was driven on the Atlantic-Council Bluffs cut-off of the Rock Island Lines. The new route was originally recommended by General Grenville M. Dodge in 1857, but because of the immense cut-and-fill operations involved, the task had to wait for modern earthmoving machines.

The new line goes across the rough terrain of western Iowa, cutting off more than 10 miles of distance and reducing curves and grades. Cuts up to 70 feet were made through hills to fill adjacent valleys.

In completing the contract, 7,000,000 cubic yards of earth were moved, much of it dead mud that made scraper loading almost impossible. But Cat* DW21 and DW20 Tractors and Scrapers did the job, with D8s as pushers. There were 42 Caterpillar units on the job and not one of them averaged less than 300 hours of work per month, despite the tough conditions. In the

opinion of the contractor, Orville Eblen Construction Co., "No other machinery built could have made such a record on this particular job."

The Atlantic cut-off has been an expensive undertaking but it should well repay the Rock Island Lines. Faster schedules and lower hauling costs will directly benefit the railroad, shippers and the traveling public.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—©



THE RACOR

Snow Blower

EASY, SAFE AND ECONOMICAL SNOW REMOVAL
FROM SWITCHES BY COMPRESSED AIR

Easy to Install • Easy to Maintain • Safe and Economical to Operate

ADAPTABLE TO REMOTE CONTROL ELIMINATES THE NEED FOR MANUAL ATTENTION DURING SNOW STORMS

The RACOR SNOW BLOWER is a mechanical device designed to keep switches clear of snow by the use of intermittent blasts of compressed air. Simple in construction, it consists of a source of compressed air, an air filter, an anti-freeze injector, a cycling tank, an air switch, an air valve and two manifolds equipped with adjustable nozzles.

SOURCE OF AIR SUPPLY

The compressed air can be supplied either from a small individual compressor for a particular switch or from a larger compressor with sufficient capacity to serve several switches; or from a central source of supply. The manifolds are attached to the stock rails of switches in such a manner that there is no interference when the switch points are thrown.

HOW IT WORKS

The air passes through the filter, the anti-freeze injector, the cycling tank and then through connecting

pipes into the manifolds. The air speed created by the blowing cycle, at a rate of approximately sixty miles an hour, removes snow, dirt, etc., out of the opening between the switch points and the stock rails. The air switch is set to operate the air valve when predetermined pressures are reached in the cycling tank. This cycle is continually repeated and can be varied within certain limits, but the usual cycle develops a blowing time of about one-tenth of the time of the cycle — the blowing taking about four seconds with the cycling tank re-charging in about thirty-six seconds. This timing was found to be adequate to keep a switch clear of snow during a total snowfall of 64½" in six days, with an air supply of approximately 100 p.s.i.

Electric cycling can be substituted for pneumatic cycling by using an electric timing device that controls a solenoid valve. This timing device, when employed, is connected directly to the air supply and will eliminate the use of the cycling tank.

RACOR engineers will gladly recommend the type of cycling best suited for any particular location.



ADVANTAGES OF RACOR SNOW BLOWER

The RACOR SNOW BLOWER has many advantages, the more important being: *Extremely low operating costs* — by far the lowest of any other snow removal method. *No melted snow*, hence no problem of drainage or icing or necessity of removal of ice formed from melted snow. *No flame to blow out* from high winds or passing trains. *No danger of fire* as a result of leaking oil from tank cars or from diesel engines that might stop over switch. *No chance to burn up ties or insulation*. If desired, the RACOR SNOW BLOWER can be operated by remote control.

Foreign matter such as dirt, sand and top soil which might blow into the switch with snow, is blown out and not left as a residue, as is often the case when snow is melted through heating methods. The introduction of alcohol in atomized form through the anti-freeze injector, combined with the effect of blowing dry compressed air has proved very effective during sleet and freezing-rain conditions.

SAFETY

Safety is perhaps the most important advantage of all, as employees are not required to manually clear switches under traffic during snowstorms, usually the period of poorest visibility.

WRITE FOR DESCRIPTIVE LITERATURE

Brake Shoe

COMPANY

RAMAPO AJAX DIVISION

109 North Wabash Avenue, Chicago 2, Ill.

America's most complete line of track specialties

RACOR STUDS

RACOR TIE PADS

AUTOMATIC SWITCH STANDS

TYPE M

VERTICAL SWITCH RODS

SAMSON SWITCH POINTS

SWITCH POINT LOCKS

RAIL LUBRICATORS

ADJUSTABLE RAIL BRACES

DEPTH HARDENED

MANGANESE STEEL CROSSINGS

REVERSIBLE MANGANESE
STEEL CROSSINGS

MANGANESE STEEL GUARD RAILS

MANGANESE STEEL SWITCH POINT
GUARD RAILS

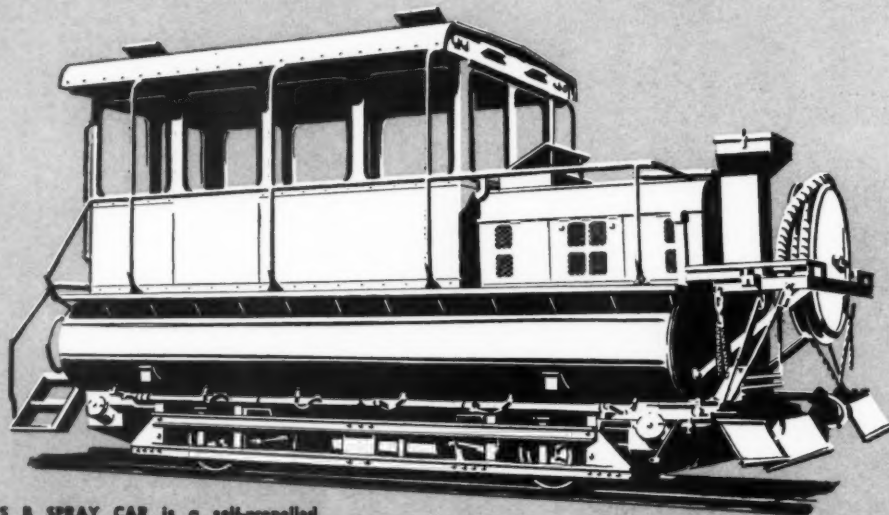
Sales Offices:

New York, N. Y.; Buffalo, N. Y.; Cleveland, Ohio;
St. Louis, Mo.; Houston, Texas; Denver, Colo.;
San Francisco, Cal.; Niagara Falls, Ont., Canada

Plants:

Chicago, Ill.; Chicago Heights, Ill.; E. St. Louis,
Ill.; Buffalo, N. Y.; Superior, Wis.; Pueblo, Colo.

Whatever your needs for work equipment...



W66 SERIES B SPRAY CAR is a self-propelled unit designed for the application of liquid weed killers to ballast and shoulder sections. Two sets of different sized nozzles can be used separately or simultaneously. Three speed, two-way drive.

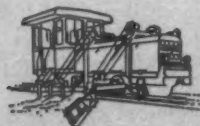
Fairmont has the answer!

Fairmont is justly famous for its contributions to railway maintenance transportation—and its name has, through years of service in the industry, become almost synonymous with railway motor cars. These same qualities of dependability, ruggedness and efficiency which have distinguished Fairmont in the field of transportation have brought it similar fame in the realm of work equipment. Grouting, Ballast Maintenance, Tie Renewal, Rail Renewal, Weed Control—all have been submitted to the skill and resources of Fairmont engineers and craftsmen. The result, in each case, has been new and greatly improved answers

to these various maintenance problems. Illustrated below are several of the many Fairmont products which typify this ever-present search for better work equipment. We hope that you will examine each carefully—so that you can better appreciate their individual contributions to fast, thorough workmanship. But we also hope you will remember that these are only a few of the vast and varied work products which Fairmont offers—covering every conceivable phase of every maintenance job in the industry today. Taken together, they make Fairmont your finest answer for every maintenance requirement.

FAIRMONT RAILWAY MOTORS, INC., FAIRMONT, MINNESOTA

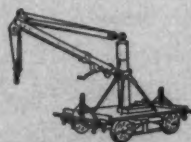
Performance
ON THE JOB
COUNTS



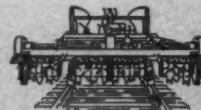
W77 BALLAST MAINTENANCE CAR mounts scufflers, discs, ballast equalizing boxes, two sizes of blades and a center plow. Additional features include a 112 h.p. engine with eight speeds and two-way, four-wheel drive.



W85 HYDRAULIC SPIKE PULLER, designed for gong use, is self-propelled for forward and reverse. One man operation. Controls, platform, seat can be positioned for pulling on either side. Its capacity is 20 to 25 spikes per minute.



W63 SERIES A DERRICK CAR, especially useful in bridge repair, can handle up to 3,000 lbs. Boom reaches eight feet from center of track. Six foot safety coupler link allows towing, even when loaded. Full 360 degree operation.



W87 TIE BED SCARIFIER with one operator can dig ten feet of tie bed a minute to a uniform depth and at right angles to the rails. Assembly is raised and lowered hydraulically. Drive for the renewable digging teeth is also hydraulic.



W61 SERIES B OIL SPRAYER, a simple compact unit, oils both sides of angle bars by spraying heated oil under pressure. Complete coverage and penetration at minimum cost. Can be fitted with weed spraying attachments.

MANUFACTURERS OF INSPECTION, SECTION AND GANG CARS, RY-RAIL CARS, MOTOR CAR ENGINES, PUSH CARS AND TRAILERS, WHEELS, AXLES AND BEARINGS, BALLAST MAINTENANCE CARS, DERRICK CARS, OIL SPRAY CARS, GROUTING OUTFITS, TIE RENEWAL EQUIPMENT, RAIL RENEWAL EQUIPMENT, WEED CONTROL EQUIPMENT

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RAILWAY TRACK and STRUCTURES

RAILWAY

TRACK and STRUCTURES

TRADEMARK

VOL. 50, NO. 9

SEPTEMBER, 1954

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SEPTEMBER, 1954 43

WRRS

ELECTRIC SWITCH LAMPS REDUCE SWITCH LIGHTING COSTS 50%



It's fun to look back at the "good old days" . . . but railroad men know that with the passage of time obsolete equipment is being replaced by new, up-to-date developments. Railroads, for example, are changing over from old-fashioned, flickering oil switch lamps and are enjoying savings of fifty percent and more. WRRS Electric Switch Lamps offer far greater dependability and actually pay for themselves in two years—with continued savings for life. Complete package units for operation with primary battery or with commercial current are available. Write for complete details.



400% BRIGHTER THAN OIL
LAMP LIGHT



NO INFLAMMABLE KEROSENE
TO HANDLE



NO CHANCE FOR ERROR
IN CHANGING LENSES



THEFTPROOF & TAMPERPROOF—
OPENED ONLY WITH AAR,
SIGNAL SECTION, WRENCH



WESTERN RAILROAD SUPPLY COMPANY

2428 South Ashland Avenue • Chicago 8, Illinois

Do You Know Your Tie Costs?

Ask a track man how much a new tie costs installed in track and the chances are he will give you an answer after a brief pause while he makes some rapid mental calculations. The answer is likely to be given in round figures, and if you ask the question of several persons you will, in all probability, get as many different answers. These factors, together with the rather offhand manner in which the subject is usually treated, are indications that perhaps the matter is worthy of more careful study.

We can assume that any estimates of the cost of a new tie in track will include the purchase price of the new tie, the cost of treatment, and the labor cost of installation. But what else should be included if we are to have a clear and complete picture of the total cost? Obviously, the expense of transporting the ties from the woods to the treating plant and from the plant to the unloading sight is a factor in the total cost. So is the cost

of unloading, including work-train expense, the cost of distributing the ties from piles to points of installation, and the expense of disposing of the old ties.

Perhaps there are still other items that should be included in any thorough appraisal of tie costs. What about the expense of follow-up tamping behind a tie-renewal program? And what about the per diem charges for revenue equipment while loaded with ties?

Perhaps there are still other items that have a bearing on the cost of a tie. Some of these will be so small that their effect on the total cost per tie will be negligible. The point we wish to make here is that any figure supposedly giving the cost of a new tie in track is useless—perhaps even worse than useless—if it does not reflect the total cost. And, if the total cost is not known, how is it possible to evaluate the worth of measures which are offered for prolonging the life of ties?

Saluting the Supervisor

What group of men can do so much with so little? What group of men can so well combine ingenuity and resourcefulness with experience and practical know-how for the solving of the problems with which they are daily confronted and who can so quietly pass off their achievements as commonplace.

These men, represented by members of the Roadmasters' and Maintenance of Way Association of America and the American Railway Bridge and Building Association, are holding their annual conventions in Chicago this month. They look and act like any other gathering of individuals meeting together to exchange and discuss ideas. They are, however, no ordinary group.

What makes them tick? Necessity has taught them to rebuild bridges and railroads overnight after the "finger of fate" has destroyed them. They are adept in the art of translating the ideas of management into

solid accomplishments without interference with the normal operation of the facilities converted. They are the plastic surgeons and bone-setters of the railroad, continually laboring to rebuild and erase the breaks and blemishes that are the toll of time and nature. But most of all, regardless of their official titles, they are engineers. Some are engineers by way of formal education, but by far the larger group are engineers by way of the "school of experience."

This journal has recorded many of the seeming miracles that these men have accomplished. Most of them, however, have never been recorded, partly because of the inherent modesty of the individuals in this group.

Much of the progress in the development of labor-saving methods and machines has originated in their fertile minds, later to be developed for the benefit of all by management and manufacturers. May they continue to new heights of achievement.

PROGRAMS

Concurrent Annual Conventions of the Roadmasters' and Maintenance of Way Association and the American Railway Bridge & Building Association Conrad Hilton Hotel, Chicago, September 13-15, 1954 (All Sessions Chicago Daylight Saving Time)

JOINT SESSION

(Grand Ballroom)

Monday, September 13

- 10:00 a.m.—Meeting called to order.
Invocation.
Welcome by presidents of the Roadmasters' and B&B Associations.
Greetings from American Railway Engineering Association.
Greetings from Track Supply Association.
Greetings from B&B Supply Association.
10:30 a.m.—Address by R. P. Hart, chief operating officer, Missouri Pacific, on Increasing Responsibility of Supervisors on Today's Railroads.
11:15 a.m.—Address by E. H. Haltnann, director of personnel, Illinois Central, on Public Relations Depend on Employee Relations.
12:00 noon—Joint announcements.
12:05 p.m.—Adjournment for lunch.

MONDAY AFTERNOON

ROADMASTERS' SESSIONS

(North Ballroom)

- 2:00 p.m.—Address by President H. W. Kellogg.
2:15 p.m.—Recognition of past presidents by Mr. Kellogg.
2:20 p.m.—Presentation of honorary memberships by E. J. Brown.
2:30 p.m.—Report of Necrology committee by S. E. Tracy.
2:35 p.m.—Report of Committee on Methods of Handling Ballast—J. E. Eiseemann, chairman (district engineer, Gulf, Colorado & Santa Fe, Galveston, Tex.)
3:25 p.m.—Report by Standing Committee No. 3 (Roadway)—R. H. Carpenter, chairman (engineer design, Missouri Pacific, St. Louis, Mo.)
3:30 p.m.—Report of Committee on Maintenance of Railroad Crossings at Grade—V. C. Hanna, chairman (chief engineer, Terminal Railroad Association of St. Louis, St. Louis, Mo.)
4:15 p.m.—Adjournment.

BRIDGE & BUILDING SESSIONS

(South Ballroom)

- 2:00 p.m.—Address by President Lee Mayfield.
2:15 p.m.—Recognition of past presidents.
2:30 p.m.—Report of Committee on Inspection, Repairs and Replacement of Culverts—M. D. Carothers, chairman (assistant chief engineer, Gulf, Mobile & Ohio, Bloomington, Ill.).
3:00 p.m.—Report of Committee on Metal Fasteners in Bridge Construction—G. W. Benson, chairman (superintendent of bridges, Central of Georgia, Macon, Ga.).
3:35 p.m.—Report of Committee on Fireproofing of Timber Bridges—C. E. Elliott, chairman (division engineer, Western Pacific, Sacramento, Calif.).
4:15 p.m.—Adjournment.

TUESDAY MORNING

September 14

- 9:30 a.m.—Report of Committee on Welding in Connection with Maintenance of Track—D. J. Bell, chairman (welding inspector, Frisco, Springfield, Mo.).
10:15 a.m.—Report of Standing Committee No. 2 (Track)—D. C. Hastings, chairman (division engineer, Richmond, Fredericksburg & Potomac, Richmond, Va.).
10:20 a.m.—Address by C. J. Code, assistant chief engineer—engineer of tests, Pennsylvania, on Laboratory and other Tests to Aid in Solving Track Problems.
10:50 a.m.—Report by Standing Committee No. 1 (Machinery for Maintenance of Way Work)—A. H. Whisler, chairman (assistant engineer, Pennsylvania, Philadelphia, Pa.).
10:55 a.m.—Report of Committee on Economical Size of Gangs for Track Maintenance—G. D. Mayor, chairman (assistant division engineer, Chesapeake & Ohio, Russell, Ky.).
11:45 a.m.—Adjournment for lunch.
9:30 a.m.—Report of Committee on Tunnel Maintenance—S. White, chairman (general bridge & building supervisor, Southern Pacific, San Francisco, Calif.).
10:20 a.m.—Report of Committee on Organizing for Restoration of Flood Damage—E. L. Collette, chairman (division engineer, St. Louis-San Francisco, Ft. Smith, Ark.).
11:10 a.m.—Report of Committee on Trends in Modernization of Freight Stations—R. C. Baker, chairman (engineer structures, Chicago & Eastern Illinois, Danville, Ill.).
12:00 noon—Adjournment for lunch.

TUESDAY AFTERNOON

(North Ballroom)

- 2:00 p.m.—Announcements and statement concerning trip to be made on Wednesday afternoon—by J. E. Griffith.
2:05 p.m.—Address by M. L. Dunn, vice-president, construction and maintenance, Chesapeake & Ohio, on Immediate and Long Range Future of Maintenance of Way.
2:50 p.m.—Address by C. P. Fisher, operating officer, Northern Region, Railroad Section, Illinois Civil Defense Agency, on Effect of the H-Bomb on Track and Structures (to be accompanied by sound moving picture).
4:00 p.m.—Adjournment.

TUESDAY EVENING

(Grand Ballroom—Informal)

- 6:30 p.m.—Joint Annual Banquet of the Roadmasters' and Bridge & Building Associations—with Supply Associations.

WEDNESDAY MORNING

September 15

- 9:30 a.m.—Report of Committee on Construction and Maintenance of Highway Grade Crossings—H. F. Davenport, chairman (supervisor track, Illinois Central, Corinth, Miss.).
10:15 a.m.—Report of Committee on Rules and Regulations for Safe Operation of Highway Motor Vehicles—L. A. Villela, chairman (safety inspector, Pennsylvania, Philadelphia, Pa.).
11:00 a.m.—Business Session.
11:45 a.m.—Adjournment.
9:30 a.m.—Report of Committee on Cleaning and Painting of Railroad Buildings—W. L. Short, chairman (bridge inspector, Missouri Pacific, St. Louis, Mo.).
10:15 a.m.—Report of Committee on Adaptation of Water Service Facilities to Dieselization—C. H. Bush, chairman (water service supervisor, Texas & New Orleans, Ennis, Tex.).
11:00 a.m.—Business Session.
11:45 a.m.—Adjournment.
Election of Officers.

WEDNESDAY AFTERNOON

- 12:30 p.m.—Busses will leave the south or 8th Street entrance of the Conrad Hilton Hotel to transport the members of both the B&B and the Roadmasters' Associations to the Electro-Motive Division of the General Motors Corporation Plant at LaGrange, Ill.
1:30 p.m.—Tour will start through the above mentioned plant.
4:30 p.m.—Busses will arrive back at the hotel.



William A. Maxwell



H. R. Deubel

Greetings from the Supply Associations

TO MEMBERS OF THE ROADMASTERS' ASSOCIATION AND THE AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION:

New ideas, plans and designs will be discussed at your September conventions, from which you will get a wealth of information on the methods employed by other roads in handling the problem of maintaining their roadways and structures with maximum efficiency. We want you to know that our member companies appreciate the difficult nature of this problem and that they stand ready to assist you in any way possible.

Since this is a year in which there will be no exhibit of their products in conjunction with your meetings, our members have agreed that no displays or exhibits will be presented in their hotel suites. This is done to help assure maximum attendance at your meetings; however, our representatives will be on hand to answer any questions you may care to raise pertaining to the products manufactured by their companies. We hope you will take advantage of the opportunity to discuss with them such matters as the safe and efficient operation of work equipment and the economic application of materials.

It has been said that we are today confronted with the need for a higher standard of maintenance than was necessary in the past and that this standard must be achieved with the greatest possible economy. One of the greatest fields for improvement lies in increasing the productive work per man-hour. This is an endeavor in which we can cooperate by supplying and equipping your men with the best machines and tools and with improved appliances. The absence of an exhibit this year is in no sense a measure of the efforts being put forth by our member companies in developing new products. The fact is that most of them are actively engaged in development work aimed at improving existing products and in perfecting new machines, devices and materials, all with the objective of helping you do a better job.

To supplement your business sessions at the conventions, and as an expression of our high regard for your two Associations, we will tender a banquet at the Conrad Hilton hotel on Tuesday evening, September 14, at which your members and their families are invited to be our guests.

You have our cordial best wishes for the success of your meetings, which we expect will stimulate all those in attendance to become better supervisors.

Wm. A. Maxwell

President
The Track Supply Association

H. R. Deubel

President
Bridge and Building Supply Association



Supply groups reaffirm
desire to cooperate
in solving
maintenance problems



The Milwaukee is using the new Nordberg Trakliner machine in connection with spot surfacing and lining 38 miles of track on a secondary line in northwest Illinois. The machine, operated by one man and a helper, is reported to be doing the work of a 16-man lining gang in this operation.



FOREMAN, using optical track lining instrument, gives signals to . . .



. . . OPERATOR OF Trakliner machine, who manipulates controls to make throws in either direction. Third man in crew serves as helper.

Economies Result from

Mechanical Lining Operation

● To have the assignment of lining $\frac{1}{2}$ mile to 1 mile of track per day with only two men may seem to be impossible of fulfillment. But not with a set-up the Milwaukee is now using on one of its secondary lines. The road recently purchased one of the first production units of the Nordberg Trakliner and has put the machine into service on its line between Kittredge, Ill., and Beloit, Wis., to line the track out of face.

The track on this 38-mile territory is laid with $7\frac{1}{2}$ miles of 100-lb rail and the remainder with 112-lb steel. The cross-tie condition is good and the track is well ballasted with gravel. Between 1940 and 1942 the entire territory was given a 4-in raise on clean gravel and since that time has had only routine attention except that during the summer of 1949 a tamping gang went over the line picking up low joints, tamping all swinging ties and lining the track.

The line carries considerable through freight traffic moving between Milwaukee and points west on the road's main lines to Omaha and Kansas City. In addition, there is a heavy movement of coal and gravel to and from points on the branch itself. The line is served by four time-freight trains and two

passenger trains each day, plus tri-weekly local service in each direction. Since each of the through freight trains handles regularly in excess of 100 cars, it is evident that a sizeable amount of tonnage moves over the line.

Because of this relatively heavy traffic, the track was suffering from numerous low joints and defective cross-level. It was decided that the most economical way to rectify this situation would be to spot surface the territory and do an out-of-face lining job. The spot surfacing work is being done in the conventional manner by section forces.

Operation of Lining Machine

Behind the spot surfacing operations, an extra-gang foreman and two men do the lining with the Trakliner machine. This unit* is track-mounted and is powered by a 13.3-hp gasoline engine. The machine is propelled at speeds up to 20 mph by a mechanical drive from the engine. Lining is accomplished by horizontal acting hydraulic rams which push against the base of the rail. When a throw is being

made the machine is anchored by means of a pair of lining shoes which are pushed down into the tie cribs by vertical-acting hydraulic rams.

The Trakliner is operated by one man who manipulates the controls on the unit to make throws in either direction as indicated by the lining foreman. The other man on the crew serves as a helper to place the lining shoes in the cribs and perform other miscellaneous tasks. The foreman is using a National Optical Trackliner on this job and gives signals to the machine operator in much the same manner as is done with a lining gang. Set-ups for throws with the unit are made about every half rail length.

At the time this work was seen, the lining and spotting operations were progressing at the rate of about $\frac{1}{2}$ mile per day. However, at that time the gang was working on the stretch of 100-lb rail which was in considerably worse surface and line than the 112-lb rail which covers the major portion of the territory. It is expected that on the 112-lb track the operation will speed up to the point where the gang will be covering in excess of a mile per day.

Milwaukee officers point out that

* A detailed description of the Trakliner and its operation appeared in *Railway Track and Structures*, March 1954, p. 61.



AHEAD of Trakliner, kinks and swing are typical of line condition.



BEHIND machine, perfect line is revealed by close-up view along rail.

the Trakliner relieves a gang of 16 men, which the road formerly used on this type of operation. Experience on this road is that the machine can line more track per day with continuous operation than the "equivalent" 16-man gang because the machine has a constant output and is not affected by the temperament and fatigue factors that may slow down a gang of men. On the other hand, some time is lost with the machine in clearing trains, thus putting it back more on a par with the 16-man organization, as to distance covered.

The machine can be set off quickly alongside the track by the three men who work with it. Four transverse wheels are attached to the underframe of the unit, permitting it to be rolled off onto a prepared set-off consisting of special lightweight rails placed on a tie crib. In addition, the 20-mph running speed of the Trakliner allows the unit to be run to a siding if one is located not too far distant.

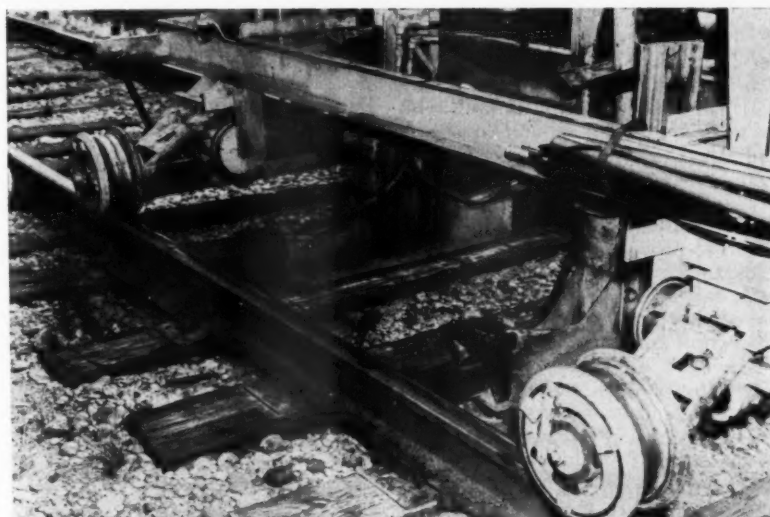
Use on Bridges

Another interesting aspect of the lining work done by the Trakliner, as noted on the Milwaukee, is the efficiency with which bridges may be lined by bridge forces in connection with the general track-lining operations. Where a bridge is quite noticeably out of line, requiring that a swing be made on the approaches to the structure, the situation is being corrected by a

How the Trakliner works . . .

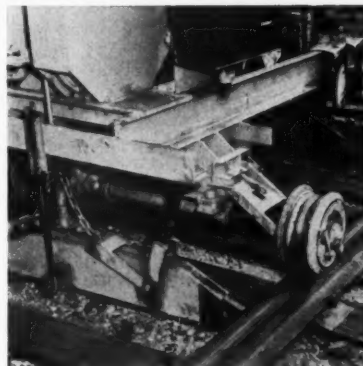


GAGE SIDE of rail is exposed on line side by shoving moveable flanges inward, thereby enabling foreman to sight "through" machine.



MACHINE is anchored by lining shoes pushed into cribs with vertical hydraulic rams, after which horizontal rams push against base of rail to make throw.

joint lining project using bridge forces and the lining machine. Bridge men are moved to the site a few days before the spotting and lining operation arrives at the location. On the day set for lining the bridge, the Trakliner is moved to the bridge under its own power. Then, as bridge forces correct the alinement on the bridge deck, the Trakliner makes the necessary throws on the approaches to the structure. In this way it is possible to coordinate the activities of the bridge gang with the track forces in an efficient manner and without tying up a large group of track men for the job.



RAIL CLAMPS at each end of machine hook under rail head and hold the unit firmly to rails during a throw.

Dome cars and gallery suburban coaches, now on order, could not be placed in operation by the Chicago & North Western until adequate vertical clearance was provided in the 6-acre trainshed at its Chicago passenger terminal. Through careful planning and the use of unusual, but effective, methods the project was completed without delaying trains or inconveniencing passengers.

More Clearance Needed, So . . .

Six-Acre Roof Is Raised 1 Ft

● Ingenuity and resourcefulness were two important factors in planning and executing the unique job of raising a large steel-and-concrete trainshed roof at Chicago. This roof, covering an area of 265,800 sq ft (6.1 acres), and weighing approximately 10,000 tons, was raised 12 in to provide additional vertical clearance over the tracks. The work was carried out safely, under traffic, without interference with train operation and in such a manner as to permit the work to proceed smoothly and without interruption due to train movements or the use of the trainshed by passengers.

Plans to introduce dome-type cars in through train service and gallery-type (double deck) coaches in suburban service on the Chicago & North Western made necessary this increase in the vertical clearance in the trainshed of the road's passenger terminal. So well was the work planned and coordinated that none of the 178 suburban and 58 through trains which daily enter and leave the stub-end tracks of this station was delayed, nor were any of the more than 90,000 passengers who daily ride these trains inconvenienced during the progress of the work.

Construction of Trainshed

The Chicago terminal of the North Western was placed in operation in 1911. Sixteen tracks enter and stub in the trainshed which is on of the Bush type, consisting of a



BUSH TYPE steel-and-concrete trainshed roof covers area of 6.1 acres and houses 16 stub tracks which handle 236 trains and 90,000 passengers daily.

steel-and-concrete roof carried by a series of arched girders spanning each pair of tracks and supported by a line of columns along the center of each platform. Over the center of each track there is a continuous slot through which the fumes from locomotives are exhausted. The shed extends 738-ft north from the line of the station building over the seven easterly tracks, and 891 ft from the building over the nine remaining tracks. The notch at the northerly end of the structure was made necessary by the curvature of the tracks entering the covered area.

The girders have a span of 39 ft 3 in. Their lower flanges are curved in the shape of a five-centered arch, and their upper flanges are shaped to a simple curve. They are spaced 25 ft 6 in apart and are connected together longitudinally by two latticed struts over each track, which form the framework for the concrete walls of the smoke slots. The columns supporting the girders are each fabricated from two 12-in channels with the flanges turned in and latticed together. Two 10-in channels, with a plate riveted to their bottoms and with curved brackets at their ends, form a longitudinal trough-shaped strut between the tops of the columns. A cast-iron capital was bolted to the top of each column directly under the girder and strut connections.

There are 270 columns supporting the trainshed roof, each carrying an estimated dead load, without

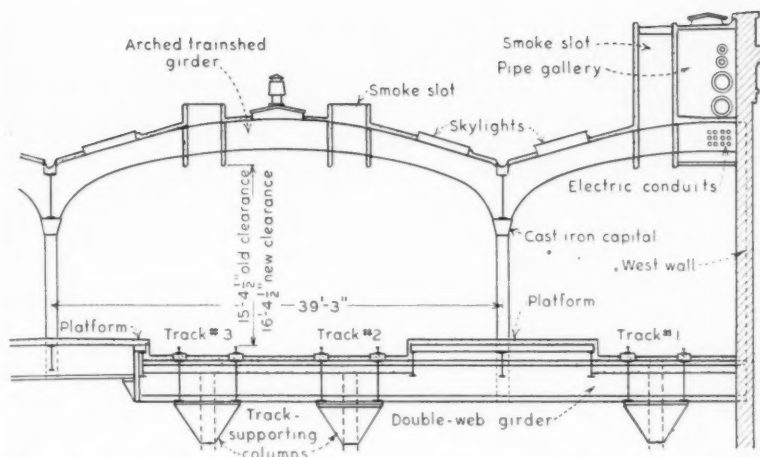
snow, of approximately 35 tons. The roof itself is of mesh-reinforced concrete with a minimum thickness of 2½ in, increased as necessary to provide drainage. The clearance between the bottom of the smoke slots and the top of rail was 15 ft 4½ in.

A feature of design that had a bearing on selection of the method used to raise the roof is that, largely for grade-separation purposes, the track level in the trainshed is elevated above that of intersecting and flanking streets, with the space

Steps in jacking procedure . . .



COLUMNS were severed in two stages with an oxy-acetylene torch to permit the welding of . . .



STRUCTURAL FEATURES of trainshed are shown by this partial section. Pipe gallery prevented raising of roof over Track 1.

underneath the tracks being used for various purposes. The track-supporting structure consists of a line of columns under each track supporting a line of longitudinal girders under each rail. Transverse double-web girders, spanning between the track-supporting columns, carry the floor system for the passenger platforms and also the trainshed columns. Any scheme for raising the trainshed roof had to take into consideration the deflection characteristics and load-carrying capacity of the girders.

Development of Plan

When the new dome cars and gallery-suburban coaches were ordered, studies were initiated by

the road's engineering department to determine the most economical method of providing the increased vertical clearance necessary to permit the operation of this equipment in the trainshed. An idea for extending the columns "telescope fashion" was conceived by A. R. Harris, engineer of bridges. This plan called for the progressive raising of the structure in graduated increments to provide an easy "run-off" to the unraised portion of the roof.

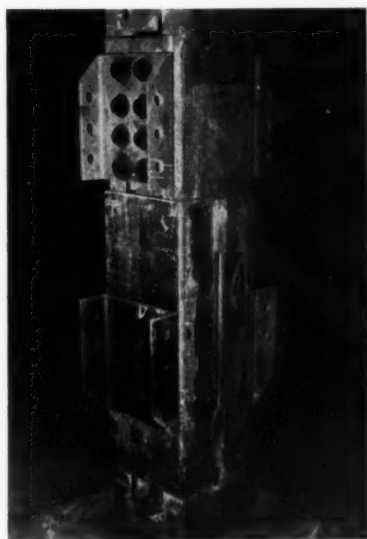
The raising was accomplished by cutting each column and applying a sleeve, welded to the lower portion of the column below the cut, in which the upper portion of the column would be free to slide telescope fashion as it was raised by

jacking. The purpose of the sleeves was to prevent any displacement of the cut ends of the columns during jacking operations that might result from temperature changes or other causes.

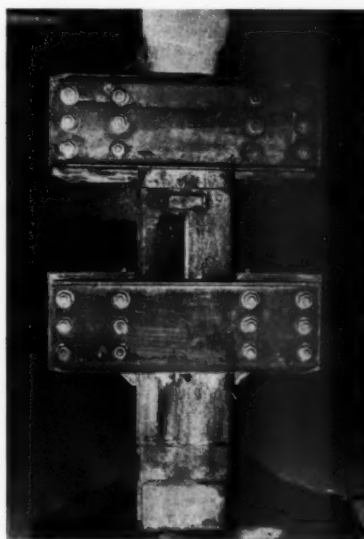
Before the trainshed roof could be raised it was necessary to cut it free from the supporting columns along the east wall, at the depot end and on the platform between tracks 1 and 2 on the west side of the trainshed. This last was required because of the existence of a pipe gallery between the smoke slot over track 1 and the west wall of the trainshed. The methods followed and the precautions taken in severing the supports around the periphery of the trainshed are described later.

Work on the project was started in February 1954. The first operation consisted of the removal of the old cast-iron column capitals. It was found that through the years these capitals had acted as moisture collectors because they were virtually water tight at the bottom while being more or less open at the top. As a result considerable corrosion damage was found at the tops of the columns. This was corrected by arc-welding plate brackets or braces to the columns directly under the connections of the roof girders and the column struts.

The first step was to arc-weld predrilled steel plates to the column's lattice sides about five feet above the platform level. The lattice bars below these plates were then removed and a cut made through half of the column about



U-SHAPED plates to the lower stub to form a sleeve in which the upper portion moved "telescope" fashion.



JACKING FRAMES were attached to these sleeves and to the columns above with 1-in high-tensile bolts.

More on next page . . .



HYDRAULIC JACKS equipped with gages provided equalized loads at each column to prevent twisting.

two feet above the platform. A pre-drilled U-shaped sleeve 3 ft long was then clamped around half of the column with the toes of the sleeve at the centerline of the column channel webs. That portion of the sleeve below the cut in the column was fastened to the column by arc welds along the vertical and bottom edges of the sleeve. The other half of the column was then cut and a second sleeve placed in the same manner. The tops of the sleeves were then temporarily connected to each other by lap splice plates welded in place.

Installation of Jacking Frames

With the sleeves in position the next step was to attach jacking frames to the sleeve plates of each column and to the column itself above the sleeve, so that jacks could be inserted between them to jack the upper part of the column the required distance. First, short vertical pieces of channel were bolted to the sleeve plates and to the plates previously welded to the column above the sleeve. One-inch diameter high-tensile bolts were used for this purpose. These bolts were inserted into the predrilled holes and threaded into nuts previously welded to the backs of the plates.

Longer channels were then bolted transversely in pairs to the outstanding legs of the shorter channels to form jacking beams, and diaphragm channels were inserted at the outer ends of these beams. The jacking surfaces con-

sisted of steel plates welded to the upper and lower jacking beams. Bolts for attaching the jacking frames were set to a predetermined tension by impact wrenches.

Instead of the standard jacking frames, special cantilever frames were installed at the tops of the columns between tracks 1 and 2. Special jacking supports were also installed just under the girder connections to the columns along the east wall. These special installations were designed to permit the raising of the ends of these girders for new connections to the columns.

At the depot end, special pipe columns were installed in front of the columns along the edge of the concourse. These acted as jack supports for raising the free end of the roof.

Special lightweight trussed purlins under the roof slab were installed along the east wall, and temporary trussed rod supports along the line of columns between tracks 1 and 2. Another set of temporary prefabricated trusses was installed at the depot end of the trainshed. These temporary trusses served as supports for the ends of the smoke-slot lattice trusses and the roof rafters after the latter had been cut loose from the depot building proper.

Lifting Operation

With all of the preliminary work completed, actual raising operations got underway about July 1. To make the raise, the road purchased 50-ton hydraulic jacks which were

Around the edges . . .



SPECIAL JACKING support under girder at east wall. Note trussed purlin between ends of the girders.

fitted with gages indicating the total load on each jack, thereby permitting a constant check of the loads being carried to assure that no eccentric bending stresses would be introduced in the columns. In this operation, a total of 227 columns were lengthened and the beam and strut connections around the edges of the trainshed roof were raised at 73 points, thus making a total of 300 jacking positions.

Determining Jacking Sequence

Careful consideration was given the matter of deciding on the sequence to be followed in carrying out the jacking work. An important element in this decision was the fact, determined by tests, that the

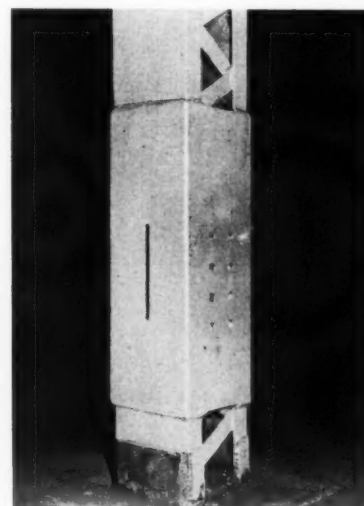
More jacking steps . . .



INSTRUCTIONS during jacking were relayed from foreman to each jacking station by portable telephone.



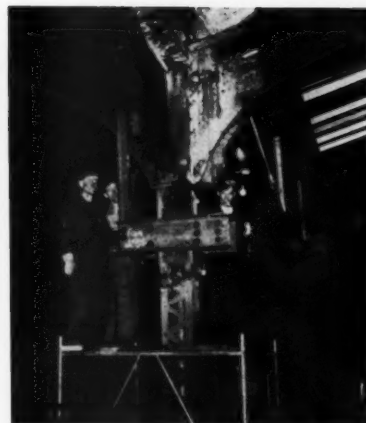
FOLLOWER PLATES between jacking frames acted as safety stops in case of a jack failure.



COMPLETED COLUMN; the black line shows the separation between the upper and lower sections after raise.



PIPE COLUMNS, placed in front of structural columns along edge of concourse at south end of trainshed, served as jack supports for free end of roof. Temporary trusses were installed to support the ends of the smoke-slot lattice trusses and roof rafters after they had been cut loose from the depot building proper.



SPECIAL CANTILEVER jacking frames, required because roof over Track 1 was not raised, were installed under ends of girders between Tracks 1 and 2.

differential in the amount of jacking between successive columns longitudinally was not to exceed $\frac{1}{2}$ in. The simplest procedure in some respects would have been to carry the jacking forward from one end of the trainshed to the other, jacking up each transverse line of columns $\frac{1}{2}$ in as the work proceeded. This procedure would be repeated until the entire trainshed had been raised 12 in.

This method, however, had important disadvantages. It would, for example, require that jacking frames be applied to all the columns simultaneously, and that steel follower plates be made available for all the columns. It would also have required the severing at one time of all the structural connections around the periphery of the trainshed, so that, with all columns cut and free to move in their sleeves, the entire structure would be "floating."

To minimize these objections a procedure was adopted under which the most northerly transverse line of columns in the trainshed was jacked up the full 12 in, with the jacking of adjacent columns keeping pace on the basis of a $\frac{1}{2}$ -in "run-off" between successive columns longitudinally of the station. Thus, by the time the extreme northerly columns had been jacked up 12 in, the run-off had extended to the twenty-fourth column from the north end. Thereafter successive transverse lines of columns were brought up the full 12 in and the run-off progressively extended. This method reduced to a minimum the number of jacking frames needed and precluded the necessity of severing all structural con-

nections around the sides of the structure at the same time.

During the entire jacking operation, and until the columns and beam ends were finally secured, 1-in steel follower plates were maintained between the upper and lower jacking frames at each column. These plates, in heights graduated to $\frac{1}{2}$ -in intervals, were placed in the spaces between the jacks and the column and were prevented from moving laterally by lugs welded to the jacking plates. The follower plates acted as safety stops in the case of a jack failure during the raising operations, and as blocking which maintained the completed raise until the columns were reconnected. The jacking procedure that was employed greatly reduced the number of follower plates required. This was true because it was necessary to provide only enough plates of any one size for a single line of transverse columns. Under the alternative method mentioned previously, follower plates of every size would have been required for practically all columns, or a total of 300,000 lb of plates. Actually, only 30,000 lb were required.

Since visual signals for the jack operators were out of the question because of the almost continual presence of equipment on the tracks during working hours, other means for transmitting instructions transversely across the trainshed had to be adopted. The method used consisted of a portable telephone system. Instructions for starting and stopping the jacking work were issued by the foreman and were received at each jacking station by a helper wearing head phones.

As each successive line of columns was brought up to the full 12-in lift, the upper portion of each column was secured to the sleeve by arc welding along the vertical and upper edges of the sleeve plates. Following completion of the work on any column the jacking frame was removed and shifted to a new location. The entire work progressed smoothly until the roof was finally secured in its new position. The actual lifting operation was completed in about 5 weeks, and provides a minimum vertical clearance of 16 ft 4 $\frac{1}{2}$ in above the top of rail. Following removal of the temporary material, all permanent steel work will be cleaned and painted.

Supplemental Work

To complete the renovation of the interior of the trainshed area, 90,000 sq ft of platform will be resurfaced with a crowned 1-in coat of modified asphalt blacktop. A four-year program of reroofing the trainshed, which was just started when the roof-raising job was initiated, will be resumed and carried to completion. The existing skylights are to be removed and replaced with plastic fiber-glass set in treated wood curbs. The smoke slots are to be vapor sealed after necessary repairs to their concrete side walls. This seal will consist of a non-absorbent fiber-glass membrane embedded in an asphalt-base material.

The raising work was done by company forces under the general direction of B. R. Meyers, chief engineer, and the direct supervision of Mr. Harris.



ENTIRE FILL IS constructed uniformly from the bottom up so that there are no soft spots or holes.

Line 44 Miles Long ...

Had 60 Bridges; Is Filling 52

• More bridges than miles of track. That used to be the situation on the Fernwood, Columbia & Gulf. This feeder road, which runs from Fernwood, Miss., to Columbia, crosses a watershed draining into the Gulf of Mexico, and had 60 bridges spanning swamps, dry hollows and small creeks scattered over its 44 miles of trackage.

In an effort to reduce maintenance, repair and replacement costs of these structures, a study was made to determine how many of the bridges were actually needed to handle the run-off. It was found that in all but eight of the structures the openings could be filled in and culverts installed to carry the flow.

So far, the road has filled in 23 of the 52 bridges which can be retired. Off-track grading equip-

ment, including a 7-cu yd Tournapull-Scraper as the principal earth moving unit, a tractor-dozzer, and a dragline, is being used for the filling operations. Fill material is obtained from the right-of-way ditchline on both sides of the track near each bridge, thus improving drainage conditions along the right of way at the same time.

The Tournapull is used to pick up the material from the right of way and transport it to the bridge site. Upon reaching the bridge, the machine, operating on one side of the track, is run up onto the fill already placed, and its load is dumped in an even layer. After the material has been unloaded, the scraper makes a U-turn under the bridge and returns for another load. The space between two bents at each end of the bridge is left

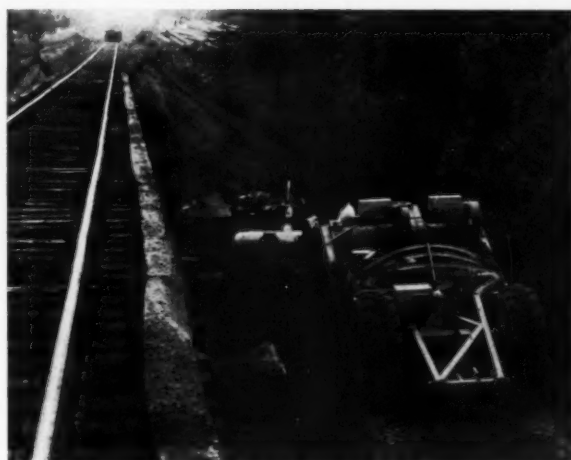
open during the filling operation so that the scraper can pass under the structure. Material is unloaded first on one side of the bridge, then on the other, so that the fill is built up uniformly.

After the scraper has moved out of the way, following each dumping, the tractor-dozzer is used to spread and compact the layer of material just dumped. When the level of the fill reaches a height where the shoulder is too narrow for the equipment to maneuver, a dragline is employed to finish the remainder of the fill. The scraper and bulldozer are then used to bring in and place dirt at a point reached by the dragline.

The fill material is built up somewhat higher than the top of the rail along the shoulders, thus leaving a ridge of dirt to allow for set-



TOURNAPULL-scraper spreads its load on the shoulder of new fill while tractor-dozer levels off and compacts.



AFTER DUMPING, scraper makes a "U" turn under the bridge between two bents where the space has been left open.



COMPLETED fill is topped off with a dragline, which provides an extra ridge of dirt to allow for settlement.

ting and for filling in when the bridge deck is removed. The fill is allowed to settle for from nine months to a year. After settlement, the rail and ties are set aside and the stringers and caps are removed, leaving only the piling in the finished fill. The void left by removal of the decking is then filled in, crossties are placed and the running rail relaid to complete the job.

One of the recent filling projects was a 300-ft trestle which required 17,000 cu yd of material for the fill. The base of the fill is 80 ft wide, the crown is 35 ft wide and the depth averages 26 ft. On this job, the scraper hauled material distances ranging between 1050 ft and 1200 ft, and was able to deliver almost 100 cu yd of earth per hour to the bridge site.



SETTLEMENT of new fill requires about a year, after which track is set aside and stringers and caps removed.

Track Inspection from Trains . . . Is It a Lost Art?



By **B. F. McDermott**
Roadmaster
Chicago & North Western
Brookings, S. D.

● Are roadmasters and track supervisors neglecting the important duty of checking track for rough spots by curtailing their train-track inspections? Has the automobile and paved highway, plus restricted train service over our territories which have been lengthened during the past few years, caused us to become what we might call "automobile roadmasters." I am prompted to raise these questions because I believe that we as roadmasters and track supervisors are, to some extent, drifting into this new mode of travel and, perhaps through no fault of our own, are actually neglecting the most important part of a roadmaster's duty: *Track inspection from the rear end of a train.*

In my opinion there is nothing that can replace, in value and importance, the riding of trains by the roadmaster or track supervisor who knows how to find and recognize a rough spot from the rear end of a train. Unless we place more emphasis on the importance of this part of our work we will continue to have rough-riding track regardless of the latest track refinements and the best mechanical aids.

Do not misunderstand me; we all know that the automobile is necessary for many kinds of work that a roadmaster has to perform. For quick, emergency transportation in making contacts with field forces and with railroad patrons, the automobile has an important place. This fact cannot be discounted.

How are rough spots found from a moving train. This is not as easy as it sounds, that is, if it is per-

MANY FACTORS enter into the finding of rough spots from a train, according to the author.

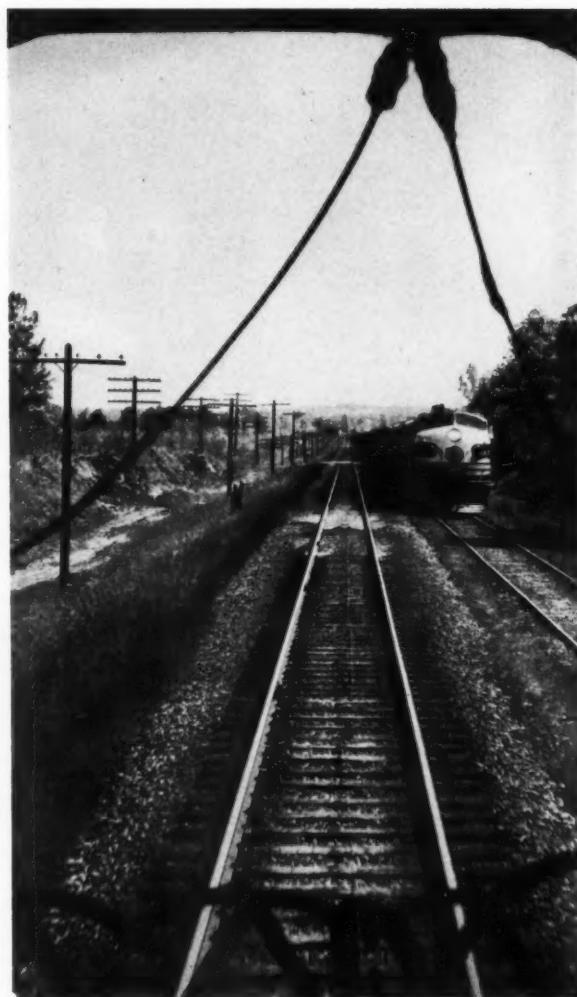
formed correctly. There are many factors that enter into the finding of a rough spot while riding a train. In the first place the track inspector riding the rear end of the train has to be familiar with the type of equipment he is riding. At the present time we have four types of equipment: The conventional-type coach; the streamlined coach; the diesel or steam locomotive; and last, but not least, the caboose or way car. Streamlined equipment has a tendency to "camouflage" or "cover up" short spots, or what we call "holes in track, while the conventional coach will bring out almost every irregularity to the attention of the inspector. Therefore, rough track should be spotted whenever possible while riding conventional equipment, although if the inspector is thoroughly familiar with the riding qualities of streamlined equipment, rough track can be recognized from such equipment.

If possible, the inspector should be positioned at the rear end of the train so that he can look out of the rear door. He must be able to "get the feel" of the coach. The inexperienced inspector is oftentimes fooled by rough riding equipment, such as excessive lateral movement in trucks, rough-riding trucks, etc. Also, sudden applications of air brakes cause trucks to ride rough during the brake application.

This type of interference can be easily recognized after the inspector gets "the feel" of the coach. This takes a little time and experience.

Using the Results

When a rough spot is found, its location should be immediately written down in a notebook and—this is important—the spot should be "pin-pointed" as to the exact location. My method is by use of



"When the roadmaster is particular about calling rough spots to the attention of track foreman a desirable psychological effect is registered on the foreman. He pays more attention to cross-level and line. He knows that his roadmaster wants a certain degree of track perfection. The actual conditions obtained are reflected in the standards set up by the roadmaster. If the roadmaster keeps on top of the rough spots, so will the foreman. Any track foreman knows that when a spot that is out of line and level is neglected it will soon develop into a longer and rougher spot. If the foreman finds that his roadmaster is passing up such spots he himself will also pass them up. This is only a natural reaction."

telegraph poles on the mile-post side of the track. Here is a sample notation: "Rough $3\frac{1}{2}$ poles east of M.P. 232." Or this can be abbreviated as follows: "R- $3\frac{1}{2}$ -P-E-MP232." Or "rough 7 poles and $9\frac{1}{4}$ poles west of bridge 1317" can be shortened to "R-7- $9\frac{1}{4}$ -P-W-B1317."

If the spot is bad the data should be wired to the track foreman, or thrown off in the form of a "butterfly" to the track department. Rough spots should receive top priority and should at least be handled with the section foreman by first mail. Further, the section foreman should be instructed to repair the spot at once and to advise when the work has been completed. The roadmaster should insist on this point. Foremen who are trained along this line are first-class foremen and usually take pride in the fact that they have good-riding track.

The inspector, by placing himself at the rear end of a coach or observation car, can see the entire track zone and right of way. When he picks up a rough spot he can immediately combine "the feel" of the spot with the actual visual observation. He can see the condition of the line and surface and the length of the defect and he can immediately "pin-point" the location by the telegraph pole method.

When Rear End Is "Blind"

Often, however, the roadmaster finds himself riding with a "blind" rear end on the train, or for some

reason he cannot get to the rear end. When this happens he should place himself in the rear end of any coach on the mile-post side, facing the direction of movement. Rough spots can then be easily located and "pin-pointed" by the telegraph-pole method. In addition he also has the entire length of the coach in his line of vision, and even though he is inside the coach he can readily observe out-of-level conditions by the way the coach rides and feels. I wish to state again that I place particular emphasis on "the feel" of the coach. The art of doing this is not acquired "overnight." You have to ride trains to get this reaction and you have to observe conditions as you ride the equipment.

Some inspectors ride the head ends of diesels or steam locomotives to pick up rough spots. This, in my opinion, is not the best location, as I have found that diesel locomotives do not expose or bring out all cross-level irregularities. When a rough spot is noted from the head end of a diesel, the spot is usually a bad one that would have been found by the inspector sooner if he had been riding a coach. At this stage of the game, steam locomotives, of course, are on their way out, and those still operating are not kept up too well, with the result that they usually ride rough.

It is good practice, however, occasionally to ride the head ends of diesels for the psychological effect on all concerned. Enginemen appreciate good riding track and are quick to inform the roadmaster of any bad condition or irregularity in track, bridges, drainage conditions, brush, crossing signs, etc. The roadmaster should make it a practice to check with enginemen regularly as to the riding qualities of the track on his subdivision. The enginemen should feel perfectly free to advise either the roadmaster or any of his track foremen of any track irregularity they might observe.

When such a condition is reported, immediate action should be taken by the track forces to correct it. Sometimes we have supervisors or foremen who are a little "thin-skinned," in that they express resentment when their attention is called to a rough condition by enginemen or trainmen. Naturally, when this feeling exists the enginemen develop a reluctance to cooperate further in this manner. Friendliness is necessary if this situation is to be avoided.

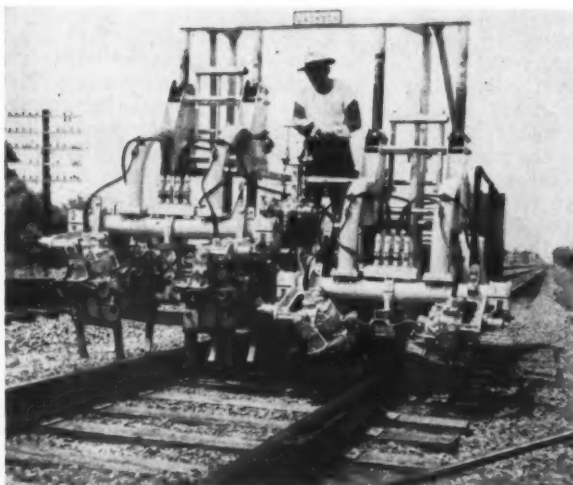
Now we come to the problem of making track inspections on branch lines or other territories where no passenger trains are operated. The problem here is to make the inspection from way freights having line speeds of only 25 or 35 mph and which operate over the territory twice or three times a week.

A rough spot picked up at these speeds is most certainly a spot that should be repaired. It is just as important to repair such a rough spot as it is one found where the line speed is 60 mph or more. It is true that track foremen and track supervisors can observe rough track conditions from their motor cars, but not all of the bad spots can be detected by such an inspection. A way car or caboose is ideal equipment from which to pick up a rough spot. Due to its short wheelbase a way car is very sensitive to out-of-level conditions. I occasionally pick up rough spots from time freights that do not show up to any great extent, even on conventional passenger equipment. If a way car rides good on your piece of track, you have nothing to worry about; your track is in pretty good shape. Of course, here again "the feel" of the car is necessary. You have to ride a way car to know the reaction. You have to take into consideration "slack" action which oftentimes will lead you to believe track might be rough.

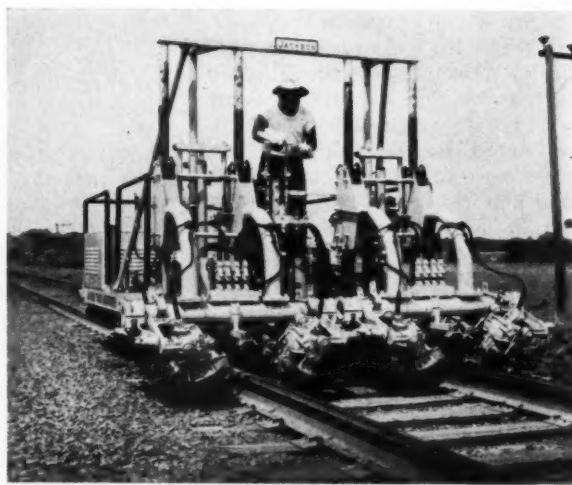
You may have to put in a long day riding the rear end of a way freight but it will pay you dividends and you can observe the condition of the tracks, bridges, stations, and other facilities. It is surprising to find what you can observe from the rear end of a train that can not be observed from a track motor car.

Here again do not misunderstand me. Motor-car inspection trips for track-inspection purposes and for making personal contacts with foremen and men on the job are very necessary, and it is not my intention to distract from the importance of such inspections. For "on-the-ground" inspections and close scrutiny of track, there is no substitute for the motor car.

In conclusion, it is my opinion that, to know your track and to know it well, there is no substitute for personalized train-track inspections by the roadmaster. Even though you may have new rail, the best ballast, the latest track refinements and mechanized equipment, your track still must have that continuous, never-ending, inspection by train.



SPLIT CROSSHEAD of Jackson Track Maintainer permits tamping of ties under either rail separately, or under . . .



BOTH RAILS simultaneously, as shown by these views of machine doing spot-tamping work on Burlington.

Demonstrated on the CB&Q . . .

New Vibratory Production Tamper

Machine with a split crosshead, and incorporating a newly-developed more powerful vibratory motor, is designed for spot-tamping or out-of-face surfacing with lifts ranging from zero to 8 in. Job on Burlington, carried out in consolidated ballast, involved spotting up joints and other low places. Average lift was about 1/2 in.

● Used in conjunction with a small labor force, a newly developed machine known as the Jackson Hydro-Electric Track Maintainer, was recently seen in operation spot-surfacing track on the high-speed main line of the Burlington between Aurora, Ill., and Galesburg. Operating in consolidated slag ballast, with a labor force comprising a machine operator, three laborers, two flagmen and a track foreman, the machine was tightening loose ties and correcting cross-level in a demonstration designed to show its adaptability to this kind of work. This equipment, which is currently being demonstrated under a variety of working conditions on a number of railroads, is a product of Jackson Vibrators, Inc., and is sold by the Electric Tamper & Equipment Co., Ludington, Mich.

The manufacturer announces that the Jackson Track Maintainer is a tamping machine of entirely new design and that it has not been developed to replace the less expensive Jackson Multiple Tamper. Rather, the Track Maintainer is intended to supplement the Multiple Tamper by providing an adaptable dual-purpose unit, which will spot-surface track in addition to carrying out production surfacing, and which derives its dual nature partly from the fact that it has a split crosshead so that it may be used to tamp under either or both rails, separately or simultaneously.

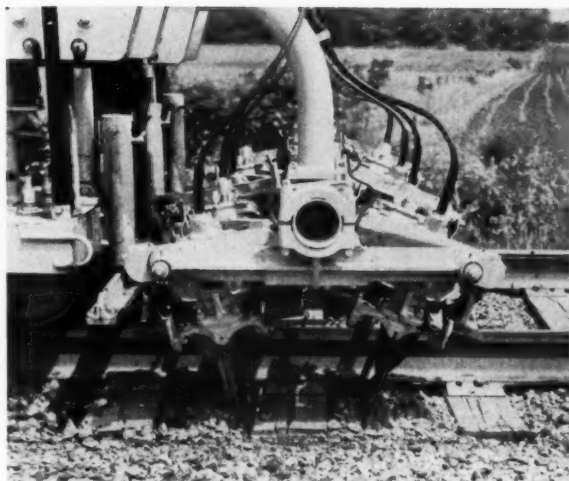
The familiar Jackson vibratory tamping principle has been retained in the new machine. However, it is said that the effectiveness of the tamping heads has been

increased about five times through the use of a specially designed electric vibratory motor which operates in a frequency range of 4,000 to 4,500 vibrations per minute.

The tamping heads, each of which carries two hard-tipped tamping bars, available and interchangeable in 2-in, 3-in and 5-in widths, are mounted in two independent groups of four units each, one group to each section of the split crosshead. The tamping units in each group are so arranged on the crosshead that each will enter one of the four quadrants formed by the intersection of the rail and the tie. Each tamping head and its motor is hung from a "lazy hinge" to which it is attached by means of a shock-absorbent support of heavy belting.



EACH TAMPING HEAD, with its two hard-tipped tamping bars and motor, is hung from a "lazy hinge" to which it is attached by means of a shock-absorbent support of heavy belting.

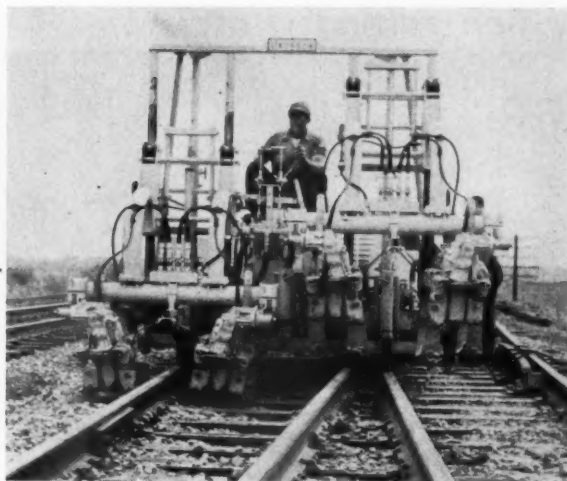


POSITIVE pressure on workhead is designed to help achieve full penetration by tamping bars, even in compacted ballast.

The crossheads are each raised and lowered vertically by double-acting hydraulic workhead ram. The down-stroke pressure is controlled by the operator, as required, to achieve full penetration of the tamping bars. It is reported that maximum pressure on the tamping heads will raise the machine from the track. The depth of penetration of the tamping heads is adjustable.

This adjustment is controlled manually by the operator, with the insertion of stops in a limit bar located near the operator's station. The depth of penetration, which is adjusted to fit the various heights of rail, is usually set at 4 in below the bottom of tie for maximum effectiveness. It may be varied, however, to make allowances for the rail section, height of lift and the type of material in which the machine is operating.

When seen in operation, the machine was working on track consisting of 131-lb rail laid on oak ties spaced 24 to the rail and supported on ballast of blast-furnace slag. The tie condition was good. There was a maximum of about $\frac{1}{4}$ in of looseness between joint ties and the rail, which ran out about six ties on either side of



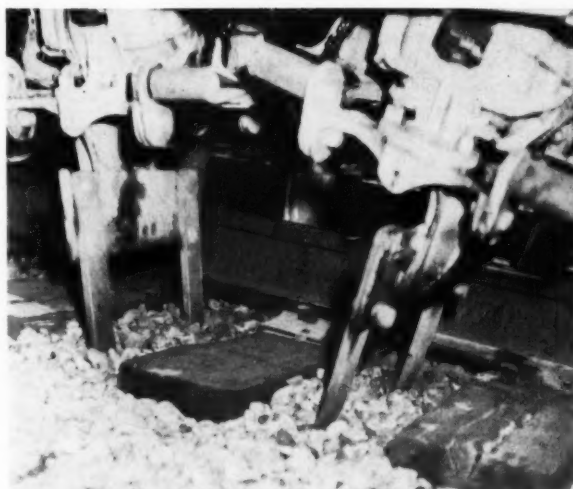
HOW TAMPING work through turnouts is facilitated by split-crosshead feature is illustrated by this view.

the joint. The rail surface in the joint area showed a droop of about $\frac{1}{4}$ in. Thus, the spotting necessary to restore the track surface totaled approximately $\frac{1}{2}$ in.

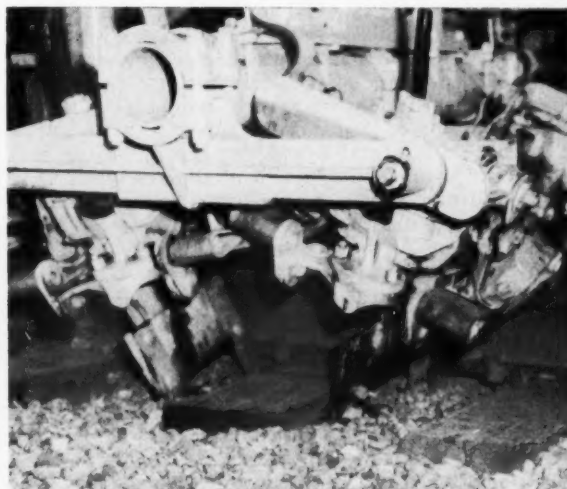
Method of Raising

Four jacks, two to each rail, were operated ahead of the Track Maintainer. A single jack was placed under the rail at the center of each depression and the rail was raised by eye to the normal running surface of the track. If the level board indicated a variation in cross-level, the opposite rail was brought up to level. To serve as a guide to the machine operator to indicate the amount of track to be raised, an arrow, pointing toward the jack, was marked in yellow keel on the running surface of the rail over the first and last ties to be raised at each of the low spots.

In operation, the machine tamped the ties successively up to the jack, tightening either or both ends as might be required. The jack or jacks were then removed and carried ahead to the next depression, while the tamper completed the tightening of the remaining

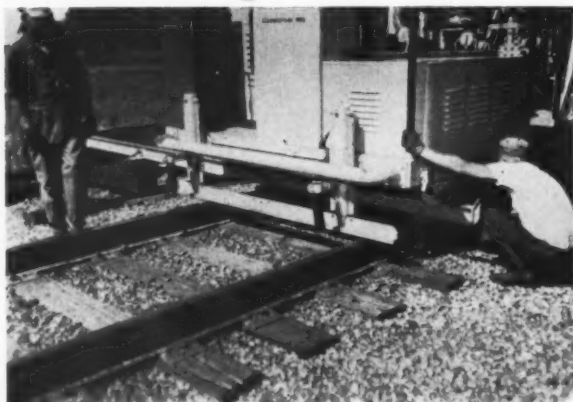


VIBRATING in a frequency range of 4,000 to 4,500 times per minute, each of the four tamping heads per crosshead enters its appropriate rail-tie quadrant and moves . . .



TORSION-PENDULUM FASHION toward the rail-tie corner of the tamping quadrant due to the torque exerted by the tamping motors through the action of the "lazy hinge."

When setting it off . . .



HYDRAULICALLY OPERATED jacks raise the machine to permit insulated run-off rails to be laid across the track rails and joined to those of the set off.



MACHINE IS LOWERED onto four permanently mounted transverse set-off wheels and pushed into the clear. Run-off rails are then removed from the track.

ties in the designated area. The spotting of the machine over each tie was expedited by the hydraulic indexer. Under the control of the operator this device, which is powered by a gear-type fluid motor, moves the machine the short distance between ties.

Three insertions of the tamping head were usually sufficient to break the mud sock around the sides of a tie and bring it to good bearing. When the cross-head was lowered, the tamping heads, suspended on their lazy hinges, moved torsion-pendulum fashion toward the tie-rail corner of the tamping quadrant due to the torque exerted by the tamping head motors. The positive downward thrust of the crosshead, coupled with the vibratory action of the tamping bars, broke the bond of the consolidated ballast, while the "spooning action" of the pendulum movement forced the ballast material from the cribs into the pillar under the tie in the tie-rail zone where the vibratory action of the tamping bars compacted it, exerting the maximum tamping effort at a point immediately under the rail.

Because of traffic interruptions, the dispersal of the tamping spots and the relatively short observation period, valid production figures for this work could not be fully established. However, timing of the work over a number of ties disclosed that an average of slightly more than 9 sec was required to tamp each tie. It has been reported that this machine averaged 470 ft of track an hour on 35 miles of work carried out during demonstrations on several railroads, which included both out-of-face and spot surfacing, with lifts of from zero to 7 in and a wide variety of ballast conditions. An average production of slightly better than 510 track-feet per hour was reported for the machine on another railroad. On this job the machine made three insertions of the tamping head per tie on a 3-in lift in free-running granite ballast on track laid with 24 ties per 39-ft rail panel.

How It Is Set Off

A set-off system permits the machine to be quickly removed from the track to clear for revenue traffic. Actual removal from the track was timed at somewhat less than two minutes after the machine had arrived at a set-off location. Approximately the same amount of time was required to return the machine to the track. In the set-off operation the equipment was lifted vertically by means of two built-in hydraulically oper-

ated jacks, one at each end of the tamper. These jacks are powered by five hydraulic rams which operate in groups, three for the front jack, and two for the rear one. After the machine was raised, insulated run-off rails were laid across the track rails and joined to those of the set-off. The machine was then lowered until four permanently mounted transverse set-off wheels contacted these rails, the jacks were completely slacked off, the tamper was pushed into the clear and the run-off rails were removed from the track.

General Specifications

This machine is equipped with a Ford four-cylinder industrial engine for chassis propulsion. This engine develops a maximum of 40 bhp and provides a maximum transit speed of 25 mph. The machine has a four-wheel drive and has three speeds both forward and reverse. A Vickers hydraulic Power Pac, driven from the fan belt of this engine, supplies the power for the set-off system.

For the operation of the generators that furnish power to the tamper heads and the main hydraulic system, a Ford six-cylinder industrial engine, capable of producing 55 bhp at an operating speed of 1,600 rpm, has been provided. This engine is equipped with a mechanical governor and clutch. Two generators rated at 7.5 kva each, and operated at a speed of 2,260 rpm, are driven from the main engine shaft through a V-belt tightened by an idler sheave. Each generator is equipped with an individual voltmeter. The pump for the hydraulic system is driven directly from the main shaft of the engine. This pump is a dual-output mobile type and has an output of 14 gpm (600 psi) from each half at the operating speed of 1,600 rpm. These pumps furnish the power for the double-acting workhead rams, which have an effective diameter of 2½ in, and to the hydraulic indexer. An emergency hand pump has been provided in case of failure of the main pumping system.

The tamper has an overall length of 16 ft, a maximum width of 9 ft 8 in and an overhead height of 7 ft above the top of rail. The chassis platform is 8 ft by 11 ft and the machine has a total weight of 12,320 lb. The axles, which may be either insulated or uninsulated, are 2½ in in diameter and mount 16-in cast-steel wheels. The main gasoline tank has a capacity of 40 gal and there is an auxiliary tank of 15 gal capacity. A 60-gal tank has been provided to handle the hydraulic oil reserve.



RAILROAD car wheels are welded to inside rims of truck's dual wheels.

By Adding Flanged Wheels ...



ADDITION of flanged wheels permits truck crane to be transferred to the rails at a grade crossing near the work.

Truck Crane Moves on Rails Too

● Because many of its job locations where a crane can be used to an advantage are inaccessible by any means other than rail, the Waterloo, Cedar Falls & Northern converted a Schield Bantam truck-mounted crane into a combination highway and rail vehicle that is able to travel to any point on its 130-mile line.

The $\frac{3}{4}$ -yd, 6-ton crane is mounted on a GMC 6-by-6 remanufactured truck on which the front wheels have been replaced with dual truck rims.

On the inside rim of each dual unit a flanged railroad car wheel is welded, so spaced that the

wheels will fit standard-gage track. A regular truck tire is mounted on each of the outer rims. On the rear the inner rim on each dual wheel has been removed and flanged wheels attached in the same manner as on the front. The rail wheels are of sufficient diameter to keep the outer rubber tires from touching the tops of ties, even on light-weight rail, yet are small enough so that they do not touch the pavement when the unit is operating on the highway.

An example of the use of the dual-service machine is afforded by the recent reconstruction of a bridge on a section of track that

could be reached only by rail. With the assistance of the crane, all material for the deck of the three-panel, open-deck trestle was loaded onto highway trucks in a material yard, after which the trucks and the crane moved via highway to a grade crossing near the bridge site. At the crossing the crane was run onto the track to transfer the material from the trucks to push cars. The push cars were then moved one-quarter mile to the trestle where a crew of four men, using the crane, unloaded the material and erected the new bridge on previously driven pile bents.

Following the bridge renewal, a clamshell bucket was attached to the machine and used to make a fill around the headwalls at each end of the structure. To complete the operation, the crane loaded the old timbers onto push cars which were moved back to the road crossing where the machine transferred the material onto trucks. The Bantam was then driven onto the highway and moved to a new job location.

The WCF&N reports that the convertible crane unit eliminated the need for a large bridge crew on this job, and, in addition, cut two days off the estimated time required for its completion, thus substantially reducing the project costs. In addition to its application on bridge jobs, the crane is being used for handling 39-ft rail (using a 10-ft boom extension) in connection with out-of-face rail renewals and for numerous miscellaneous jobs.

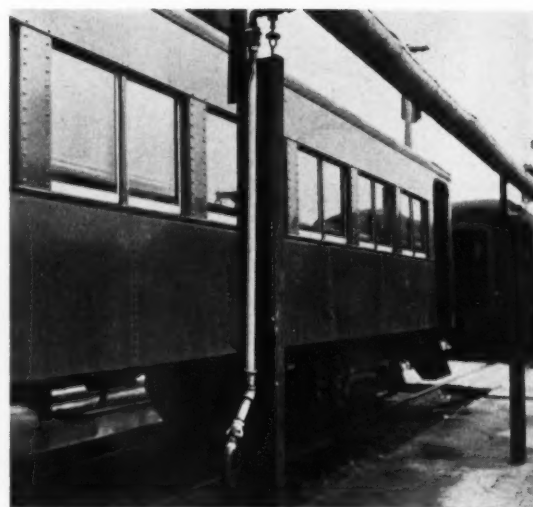


COMBINATION unit helps out on many jobs including bridge renewals, rail laying and earth moving.

Air, Steam and Water Services



OVERHEAD service lines are supported on columns fabricated from scrap 100-lb rail, and carry water, steam and air to . . .



. . . SERVICE outlets with Chicago-type couplings located at 80-ft intervals.

Bigger and Better Coach Yard

A terminal railroad in Chicago recently rebuilt its coach servicing yard to provide the latest facilities for servicing and making light repairs to passenger equipment. Included in the installation are nine new service tracks which are equipped with completely new electrical, water, steam, air, sewer and communications systems.



MODERNIZED COACH facilities of C&WI include nine service tracks with concrete platforms and overhead service lines.

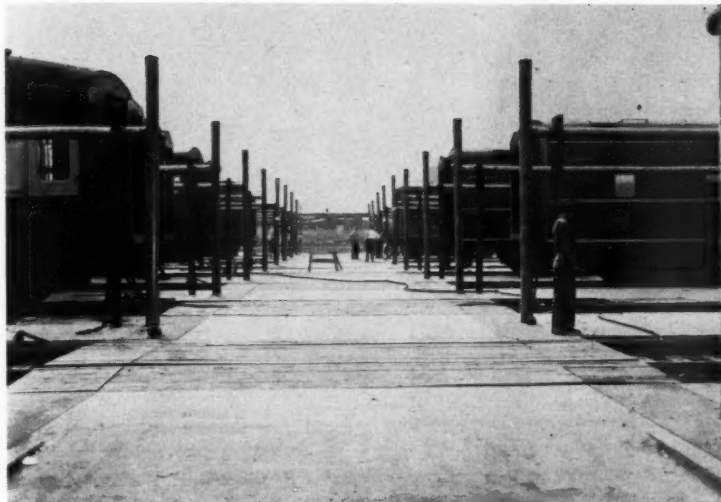
● The Chicago & Western Indiana's coach yard at 51st street in Chicago was constructed over a half-century ago. The facilities were inadequate in many respects, with close track centers, narrow platforms and insufficient standby electric service for present-day air-conditioning requirements. In a recent modernization project an adjacent freight yard was incorporated in the coach yard, and the installation as a whole was revamped to provide the latest word in passenger-car servicing facilities, complete with spacious concrete platforms and overhead service lines.

The yard handles approximately 200 cars daily, including all passenger equipment of the C&WI's five owning railroads—Chicago & Eastern Illinois, Grand Trunk Western, Wabash, Erie and Monon. In addition, equipment from any number of other roads throughout the country and Canada passes through the facility on occasion. Servicing at the yard includes icing, watering, battery charging, cleaning inside and out and mechanical repairs, excepting heavy work.

Old Yard Obsolete

The west section of the old coach yard consisted of nine tracks, four of which were service tracks, while the remainder were used for running tracks and storage of layover equipment. In addition six of the ten stub tracks in the east section were used for servicing, and four were used for storage. Track centers of the west section ranged from 12 to 15 ft, and the tracks were served by wood platforms about 5½ ft wide with pits containing connections for water located at intervals along the platforms. The old installation was constructed in 1903 and had not been modified to any great extent since that time.

On the west side of the old coach yard were five tracks used for freight service. In rebuilding the coach facilities more room was needed to permit the servicing tracks to be properly spaced; therefore, the handling of freight was transferred to another portion of the 51st Street yard located northeast of the new facility, and the freight-yard area was incorporated into the



CENTER CROSSWALK provides passage between platforms and serves as point for connecting overhead lines into mains located in . . .



. . . **TUNNELS** with removable covers along each side of the crosswalk.

new coach yard. Of the total of 14 existing tracks in the west section—9 in the old coach yard plus 5 in the old freight yard—5 tracks, totalling about 10,000 ft of trackage were removed. The remaining nine tracks were then relocated on uniform 20-ft centers to provide adequate room for new platforms and service lines. In this manner it was possible to consolidate car servicing operations on the nine remaining tracks in the west section of the yard, while car storage is consolidated in the east section.

To facilitate movements in and out of the new facility, old single-track leads were replaced with new double-track leads. In this part of the project, about 45 turnouts were relocated and 14 removed.

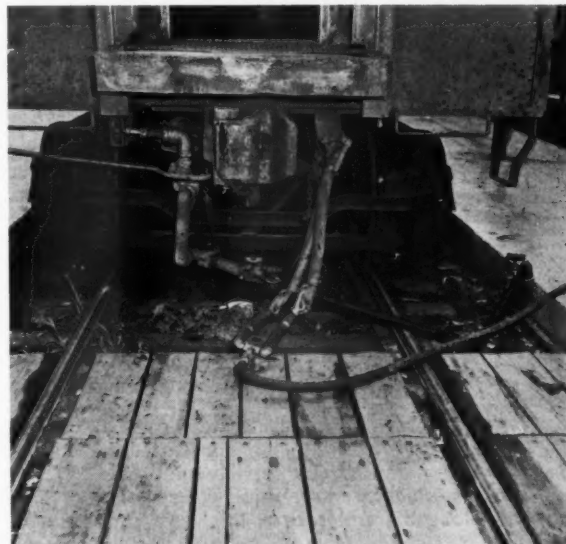
Install Concrete Platforms

Following the track relocation, 10 new reinforced concrete platforms, capable of accommodating 144 cars, were constructed, one in each of the intertrack spaces and one along the outside track on each side of the yard. All of the platforms are 9 ft wide, excepting the west one which is 5½ ft in width, and are composed of a 6-in slab with an inverted curb 18-in deep along each edge. The platforms run in a north-south direction and are sloped to the east for drainage. Along the east side of each platform, a gutter composed of Crown Rock cold-mix asphalt has been installed between the face of the inverted curb and the ends of the track ties. The gutter is at about the same level as the bottoms of the ties and is sloped inward to the curb face.

At about 200-ft intervals along the gutter, drop inlets with cast-iron gratings have been installed to carry the drainage into a new storm-sewer system. This system consists of lateral drains extending across the yard to collect the drainage from the drop inlets. The laterals are each connected to a main out-fall line running longitudinally down the center of the yard. All of the drainage system has been installed at a sufficient depth to accommodate servicing pits to be installed at a future date.

Use Overhead Service Lines

On the platforms, air, water and steam service lines are carried overhead on columns down the center of each platform. The columns are spaced on 20-ft centers



ABOVE—Steam connections for heating cars and air outlets for brake tests are provided on each track at center crosswalk.



RIGHT—Gutters, such as the one shown here, were constructed along the east side of each platform.

and are fabricated from scrap 100-lb rail. Water lines are 2 in. in diameter and are covered with 2 in of air-cell pipe insulation. A ¾-in steam tracer line is nested in with each water line to prevent freezing. Water and steam outlets have been equipped with Chicago-type couplings which extend down from the service lines at 80-ft intervals, and are attached to the adjacent column at each point. Valves for the outlets are located on the overhead lines and are controlled by means of extension handles which are permanently attached to the valves

Power, Lighting, Communications . . .



OUTLETS in boxes on alternate platforms supply electrical current.



TALK-BACK loudspeakers are located at strategic points on platforms.



FLOODLIGHT tower 120-ft high at each end of yard affords lighting.

and hang down within easy reach. Steam outlets are used for thawing out valves, clearing off car trucks, etc. Air lines have been installed on alternate platforms only and provide air at 90-lb pressure for cleaning purposes and for operating pneumatic tools. Steam outlets for car heating and air connections for testing brakes are provided elsewhere as described later in this article.

Also located at 20-ft spacings along the centers of alternate platforms are waterproof, 220-volt electrical boxes, each equipped with an outlet on either end for supplying standby power and charging batteries. The boxes are fitted with a thermal overload switch for each outlet, and, in addition, are provided with overload protection from circuit breakers and fused 75-kva transformers which are located on poles spaced at 20-ft intervals along the east side of the yard. On the average, five of the outlet boxes are connected to each transformer circuit. Underground cables running from the power poles across the yard supply current to the boxes.

Local forces have also devised a means whereby the outlets can be used to supply 110-volt current for power tools and other lower-voltage equipment. This has been accomplished by drawing current from only two poles of the 3-phase receptacles.

Protection for Electric Cables

At both ends of each electrical box, a trough has been provided in the platform to accommodate electrical cables while they are connected to the boxes. Each trough runs from one side of the platform to the other directly beneath the outlet on each end of the box. The troughs are about 2-in deep and have steel plate covers to protect the cables from being run over by power equipment used on the platforms.

The new yard has also been equipped with a communication system consisting of talk-back loudspeakers mounted on pipe stands at strategic points around the 10 platforms. These units are each connected to a central control board in the master mechanic's office which

is located at the far north end of the yard. Paging speakers provide additional communication in the yard area. There are two of these speakers, one located on a telephone pole at each end of the yard.

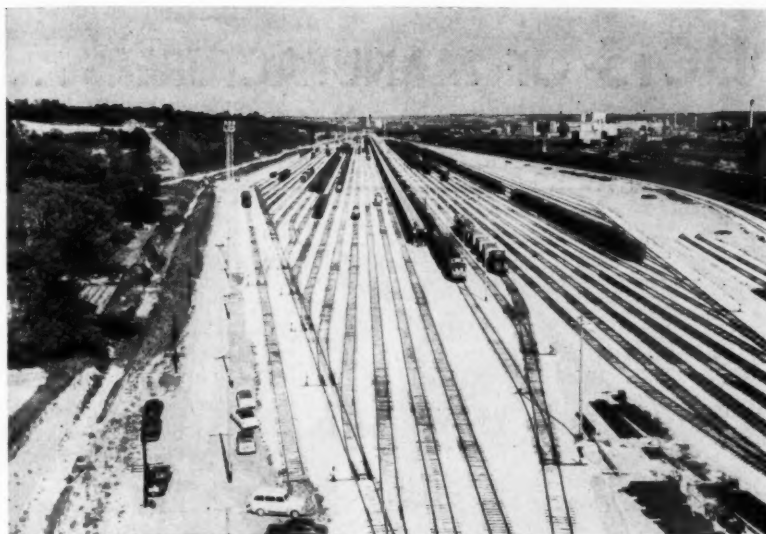
At each end the platforms are connected by a wood crosswalk, and about midway between the ends of the platforms there is a main crosswalk at which point the cars on each track are cut. This separation provides a means for employees and tractors to move from one platform to the other. Main supply lines, which bring air, steam and water from the central powerhouse, situated about a mile north of the yard, are located in tunnels along each side of the intermediate crosswalk. Connections for supplying the overhead lines are made into these mains at each platform.

Steam and air couplings have also been installed at each track crossing of the main crosswalk for connection to the "cuts" of cars extending in each direction from the walk. These connections supply steam for heating the cars and air at 110-lb pressure for making air tests. At each platform a system of valves and pressure regulators have been installed to control the supply to the service lines.

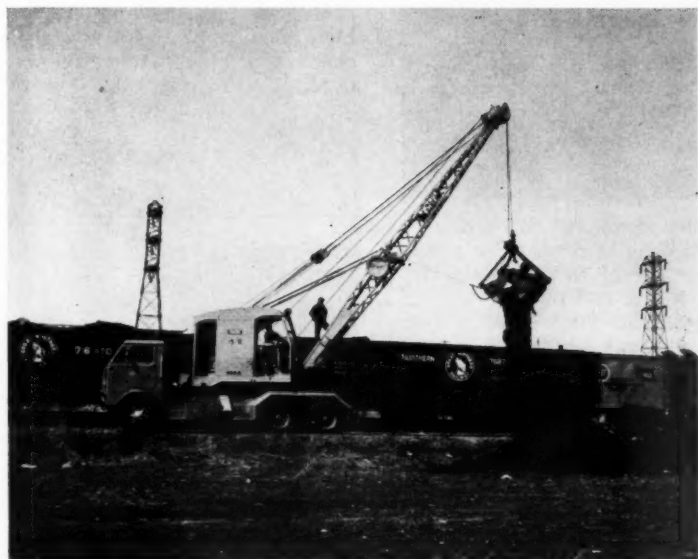
Towers Furnish Lighting

Lighting for the installation is furnished by two 120-ft floodlight towers, one located at each end of the yard. These towers are constructed of structural steel and are tapered in design from the bottom up, so that no guy supports are required. It is reported that the floodlights provide a near-daylight atmosphere around the yard at night.

Construction of the new yard facilities was begun in September 1953 and has just recently been completed. Design and construction of the project was under the general direction of D. E. Perrine, assistant chief engineer, and under the direct supervision of A. B. Hillman, Jr., assistant engineer, of the C&WI. The Ellington-Miller Construction Company, Chicago, was the general contractor.



UNION PACIFIC'S recently completed 2,764-car freight yard at Kansas City (left) is reported to be the latest word in flat-yard construction. Included in the \$4 million project is a 200-car capacity icing platform running longitudinally down the center of the yard and equipped with automatic icing machines. A 48-ft yardmaster's tower (below) houses central control for communications systems including talk-back and paging speakers located throughout the area and radio in switch engines and supervisory automobiles.



UNLOADING of trash and debris from gondola cars is handled by a Bucyrus-Erie 15-B Transit Crane at the Great Northern's yard in Minneapolis.

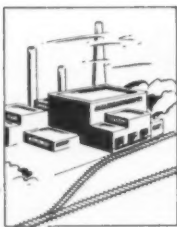
News Briefs in Pictures...



MEMBERS of Committee 22, Economies of Railway Labor, of the AREA saw quite a bit of Chesapeake & Ohio track on July 15

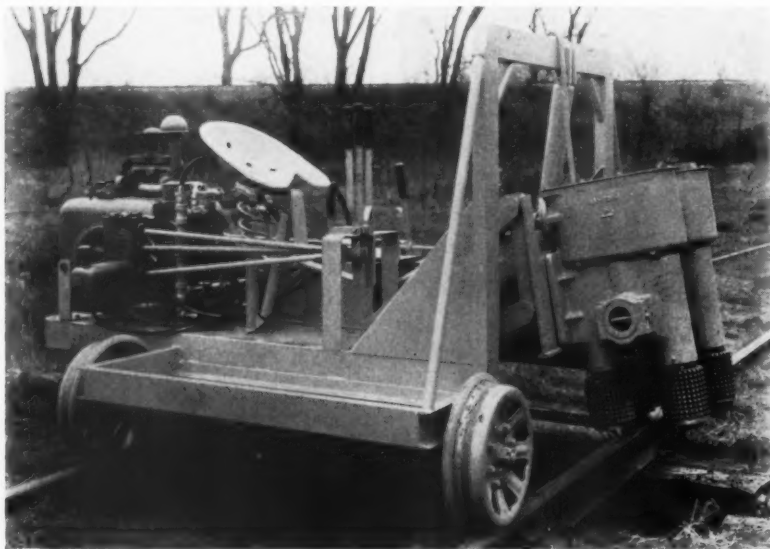


when the group made an inspection by special train of the 162 miles of territory between Cincinnati and Huntington, W. Va.



PRODUCTS OF MANUFACTURERS . . .

. . . new, improved equipment, materials, devices



TIE-RENEWAL MACHINE

A TIE-RENEWAL machine that the Matisa Equipment Corporation, Chicago, introduced several months ago has recently been further improved and perfected. The latest model consists of six main elements, a frame, an engine, a mechanical power transmission system, a tie-renewal head, a hydraulic power transmission system, and a combined hydraulic lifting device and turntable. The machine is track-mounted and is powered by a Wisconsin Model VF4 air-cooled, four-cycle gasoline engine which develops 21 hp at 2000 rpm. Ties are moved in or out by means of the tie-renewal head which consist of four tie-gripping rollers mounted in pairs so as to grip the tie on either side. The rollers are powered by a system of gears housed in two separate transmission cases, which convert the horizontal rotating motion of the engine drive shaft into the vertical rotating motion of the tie-gripping rollers. One of the gear cases is secured to a movable base plate. The other slides back and forth as desired and is controlled by a double-acting hydraulic piston which is attached to the bottom of each of the two transmission castings. A tie can thus be squeezed between opposed pairs of tie-gripping rollers and then moved in or

out. A boom-support shoe straddles the rail head and provides resistance to lateral thrust caused by rolling ties in and out.

A hydraulic power transmission system, using a Vickers Power Pac pump, operates a single-acting cylinder for lifting the tie-renewal head and the double-acting cylinder for controlling the pressure of the rollers against the tie, as well as supplying power for propelling the unit. A hydraulic motor, which develops approximately 6 hp, indexes the machine from tie to tie and provides a maximum travel speed of 5 mph. Three levers mounted in front of the operator's seat control each of these three elements of the control system.

A combined lifting device and turntable is secured to the bottom of the main frame. Using a hand-operated pump, the machine can be raised and turned either 90 deg to remove it from the track at a grade crossing or setoff, or through 180 deg to place the tie-renewal head on the opposite side.

IMPROVED RACOR STUD

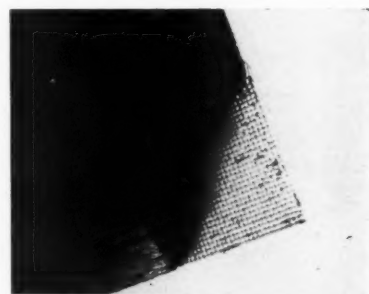
IMPROVEMENTS to the Racor Stud, which are reported to increase its efficiency and reduce installation costs, have been an-

nounced by the Rampao Ajax Division of the American Brake Shoe Company, Chicago. The stud is now made of copper bearing steel for corrosion resistance and is also available with a galvanized coating



for use in locations where brine drippings are prevalent.

An added feature of the improved stud is a gradually tapered blunt point instead of the sharp chamfered blunt point, formerly used. It is reported that the improved point assures alinement with the hole in the tie and also makes the stud easier to set for driving.



VIEW OF ZONER tie pad showing corner where asphalt-impregnated felt has been pulled away from its wire grid reinforcing to illustrate construction.

REINFORCED ASPHALT AND FELT TIE PAD

A TIE PAD, consisting of a wire-mesh grid pressed into asphalt-saturated felt and further treated with an asphaltic material, has been announced by the Zone Company, Ft. Worth, Tex. Known as the Zoner, the new pad is reported to provide a flexible and resilient cushion and establish a neutral zone between the tie and the tie plate, thereby inhibiting abrasive action and denying access of water, grit and other destructive agencies to the top of the tie. The Zoner is designed to be self-sealing in that spikes driven through the pad are

enclosed in, and sealed by, the asphalt impregnated material.

The wire-grid reinforcing is positioned to provide metal-to-metal contact with the underside of the tie plate, thereby tending to prevent rupture or displacement of the impregnated fibrous material of the cushion. At the same time the construction permits the under surface of the tie plate to be gripped and held fast by the asphaltic material of the pad.

The company recommends that a thin application of its Heavy Duty Coating No. 2 or similar asphaltic material be applied to the top of the tie before positioning the Zoner. This acts as a further conditioner and sealer for the adzed surface of the tie.

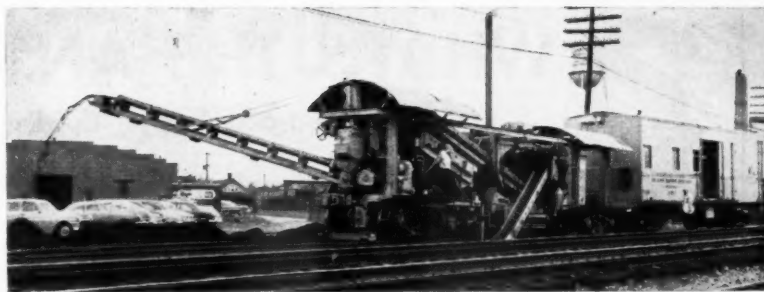


CRAWLER TRACK LINER

A TRACK-LINING machine, mounted on a crawler-type tractor which operates between the rails, has been announced by the Railway Maintenance Corporation, Pittsburgh, Pa. Known as the LineMaster, the unit is reported to be capable of lining in excess of one mile of track per day.

The unit is entirely hydraulic in operation. Travel control is provided by an independently controlled hydraulic motor on each of the crawler treads. A lining head is carried on the front of the machine and can be raised or lowered by hydraulic cylinders.

When lining, the machine is spotted with the lining head over a tie crib at the location where a throw is to be made. The head is then lowered into the crib and is anchored by a hydraulically rotated spud inserted into the crib. Horizontal-acting hydraulic cylinders then push against the base of



BALLAST CLEANER

THE MATISA EQUIPMENT Corporation, Chicago, has brought out an entirely new version of its ballast cleaning machine, which returns cleaned ballast to the track closely behind the excavating mechanism. Using the basic principle of complete ballast cleaning by means of an endless digging chain which passes under the track and conveys the dirty ballast to a system of vibrating screens, the machine consists of two parts—a cleaning unit and a power unit.

The cleaning unit is mounted on two standard four-wheel trucks, the steel frame of which carries digging chains, conveyors, vibrating screens, a cable winch and their driving mechanisms. The power unit is a steel box car which houses generators, fuel tanks and other auxiliary facilities, motive power for moving the cleaner to work sites, a compressor and air reservoir to operate the unit's airbrake system and signal horns, and a workshop and spare-parts section containing tools.

When in operation, the cleaning unit is pulled along by a cable

which is fastened to the track some distance ahead. As the cleaner moves along, the revolving digging chain excavates and carries the dirty ballast up onto the unit. There it is deposited on a conveyor which carries the material to double-deck vibrating screens where dirt and fine particles are removed and placed on a system of conveyors which waste the dirt to either side of the track or into cars. The cleaned ballast is dropped into the excavated cribs immediately behind the digging chain so that the length of track unsupported by ballast is almost nil, and a clean layer of ballast is provided for the ties to rest on.

If the excavated ballast is all to be wasted rather than cleaned, the material is diverted directly from the first conveyor to the second so as to by-pass the vibrating screens.

The ballast-cleaning unit is powered by direct-current motors which are supplied with electricity from two General Motors diesel generators rated at 75 kw each. Locomotion at speeds up to 35 mph is provided by traction motors mounted on the trucks of the power car.

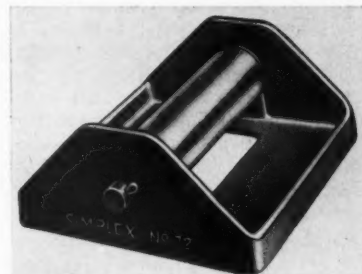
the rail in either direction to make the required throw.

The LineMaster does not obstruct the view along either rail during the operation, and throws of from 1/16 in to 6 in can be made with the unit. Because of the method used to anchor the machine, it is said that the track is not raised during a throw. The manufacturer states that the machine will line track that has not been surfaced.

RAIL DOLLY

A RAIL DOLLY, made especially for assisting in driving up expansion in track, installing welded rail and changing switch points, has been announced by Templeton, Kenly & Co., Broadview, Ill. Essentially a roller mounted on a low stand, the dolly is designed for use in pairs to permit easier movement

of heavy rails. Guides on each side of the dolly stand prevent rails from slipping off and injuring workers.



The stand also has cleats on its base to anchor it firmly as it rests on a tie.

When used for bumping, the device is said to increase safety and cut damage to rail ends because the bumping rail can be more
(Continued on page 84)



WHAT'S THE ANSWER?...

... a forum on track, bridge, building and water service problems

Gage Holding Independent Fastenings

Do independent fastenings in tie plates have greater or less gage-holding power than ordinary track spikes? Why? How much?

Reduce Lateral Thrust Action

By C. B. BRONSON

Assistant Chief Engineer Maintenance of
Way-System New York Central,
New York

There is no doubt in my mind, confirmed by test data, that the various types of holddown fastenings for tie plates have higher gage-holding power than track spikes. And why shouldn't they—the user certainly has to anticipate savings somewhere along the line if he expects to justify their added cost.

The most important anticipated virtue of these special fastenings is protection of crossties. By creating a condition of integral action between tie and plates, they should ultimately add up to greater tie life.

Nevertheless, they perform an important function in reducing or overcoming lateral-thrust action, which equates itself into better maintenance of gage. The test data so far presented certainly bears this out, although in general it is too early to determine the proportionate amount of the reduction of gage widening or irregularity when compared with track equipped with cut spikes for lagging purposes.

Quite naturally the advantages of holddown fastenings on curves are already showing up. This is to be expected as the greater severity of lateral thrust, particularly on track where both low and high-speed traffic is operated, would certainly accent the comparative difference between special holddown fastenings and cut spikes.

In general a much longer time is required to develop differences in holding power on tangents, although this might be hastened on lines of extremely heavy traffic.

The "why" of the question is answered by stating that the special holddown fastenings are designed first to maintain a con-

tinuous tight fit in the lag holes, and, secondly, most of the designs are of heavier cross-sectional area and also of stronger or higher-strength materials.

"How much" certainly calls for an indefinite answer, which could be made more positive only after careful stress measurements had been made under identical traffic conditions where the various types of fastenings have been installed at adjacent locations. Some work along these lines has been done but not enough to give any numerical or percentage differences for the various devices as compared to cut spikes. Even if such data were developed I wonder if it would add much of value in arriving at conclusions as to the relative merits of both types of fastenings.

We are interested, and vitally so, in whether we can get our money's

worth out of special fastenings by retaining good gage and especially in obtaining extra tie life. Up to date they certainly have shown considerable promise in these respects.

Several Factors to Consider

By F. J. MEYER,*
Middletown, N. Y.

So much is involved in the question that several factors should be considered in connection with it. First, the roadbed should be drained, the track well ballasted, the ties should be sound and treated, the tie plates properly proportioned, the rail heavy enough for traffic and the line and surface well maintained.

In the test on the Louisville & Nashville near London, Ky., these fundamental requirements are so well provided that it will be a long time before conclusions may be reached. Possibly, if the crossties had not been treated, the efficiency of the fastenings could have been determined sooner.

* Now retired, Mr. Meyer was formerly chief engineer, New York, Ontario & Western, and more recently he was chief engineer of the Railroad Division, Philadelphia Steel & Wire Co.

Answers to the following questions are solicited from readers. They should be addressed to the What's the Answer editor, Railway Track and Structures, 79 W. Monroe St., Chicago 3, and reach him at least five (5) weeks in advance of the publication date (the first of the month) of the issue in which they are to appear. An honorarium will be given for each published answer on the basis of its substance and length. Answers will appear with or without the name and title of the author, as may be requested. The editor will also welcome any questions which you may wish to have discussed.

To Be Answered In the December Issue

1. What percentage of the ball of a rail can be worn away before replacement is considered necessary on primary main lines? On secondary main lines? On branch lines? Explain.

2. What are the advantages of a regular schedule for the caulking of the doors and windows of railway buildings for the prevention of heat loss? Should all buildings be included? By whom should the necessary inspections be made?

3. To what extent, if any, has the introduction of diesel locomotives reduced the maintenance of ballast due to fouling? Explain.

4. What is the economical radius of operation of truck-equipped bridge gangs? Explain.

5. When applying rail joints, in what order should the bolts be tightened? Why? Explain.

6. What effective methods may be established to assume the delivery of water-free fuel oil to diesel locomotives? Explain.

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We invite exchange of information on the subject.

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So much progress has been made in timber preservation that we assume adequate ties will be used. Machine adzing and field boring of spike holes is necessary for the satisfactory application of tie plates.

In "Railway Track and Track Work" third edition, 1909, by E. E. Russell Tratman, the problems arising from the use of flat bottom tie plates and the benefits to be derived from the use of tie plates with projections on their bottoms is treated at some length. In later years it was found that these projections on the bottoms of tie plates damaged the ties and the use of such plates was quite generally discontinued until plates with tight-fitting spikes were introduced.

The ideal fastening should be simple, easily applied, easily repaired in case of accidents or wrecks, and, above all, demand low maintenance expenditure. The

screw spike so extensively used at the present time may not be the final answer. There have been failures with screw-fastened plates, due to the fact that the screws were not kept tight on the rail. The Germans believe that, by the use of proper lock washers, an intimate, constant contact between the head of the screw and the tie plates can be secured.

Prior to the use of tapered or canted tie plates, track was "rolled in" so the tread of the wheel was supported on the whole width of the cap of the rail. This required a hand-adzed job on the ties.

With machine adzed ties and canted plates there are still inequalities in the bearing of the plates to be considered in connection with installation of independent fastenings for the tie plates. Plates that teeter are difficult to anchor.

About fifty years ago, Dr. Lundie

developed a tie plate with the top and bottom parallel. A cant of 1 in 20 was obtained by a series of steps on the bottom of the plates. The plates also had a slight camber and the combination of the steps and the camber minimized the rocking action of the plates.

From various tests it appears that cut spikes with a two-coil washer or rather a two-coil spring will reduce the horizontal and vertical movements of tie plates. The shape of the head of a holddown spike does not seem important. A standard track spike works very well. The wheels hold the plates down and it takes little pressure to keep the plates from jumping up after the wheels have passed over it.

The idea of combining in one device the functions of holding gage, holding down the tie plate and preventing the rail from running, seems a little too optimistic.

Wear on Points of Spring Switches

What measures may be taken to reduce the rate of wear on the points of spring switches due to trailing point movements? Explain.

Studies Underway

By G. M. O'ROURKE

Assistant Engineer Maintenance of Way,
Illinois Central, Chicago

About five years ago, following extended observation of the limited life of switch points installed in spring switches, we decided to do something about the problem. We originally thought this wear was the result of facing-point movements of trains, passing through the turnout, from the main track to the siding. Consideration was first given to the installation of switch-point guards. However, the speed of trains in the affected district was such that the use of these guards was deemed inadvisable.

Installation of short guard rails ahead of the switch points had proved successful at locations where signal apparatus did not interfere with such location. In the instant case, two switch boxes controlling the signal circuits were located on the headblock ties. Studies were therefore initiated and plans prepared for modifying the arrangement of these boxes to permit the installation of guard rails at the locations where trouble existed.

During the course of the above studies, continued observation at the trouble points disclosed the fact that the cause of excessive wear was not the result of facing-point movements, but rather wear developed during trailing-point movements from the siding to the main line. In line with this discovery, it was necessary for us to revise our entire thinking and plans in connection with this problem.

A canvas of the experience and thought of other railroads, manufacturers and individuals developed some rather interesting information on the subject.

Another railroad expects longer switch-point life to develop from the use of heat-treated steel in these points.

One railroad has reduced the throw of the switch points to 3 in. This is expected to reduce the "slap," and thereby lessen the wear on the closed point during trailing-point movements. This reduction in slap is brought about because of the action between the backs of car and locomotive wheels and the back of the open point.

A representative of the manufacturer of the type of spring-switch mechanism used on the Illinois Central informed us that studies,

plans and tests were being conducted of a locking device that would hold the point against the traffic rail from the time it was opened by the first wheel of the train until the entire movement had cleared the point. This device is designed to stop the repeated slapping of the point against the traffic rail in the short lag between the passage of successive wheels.

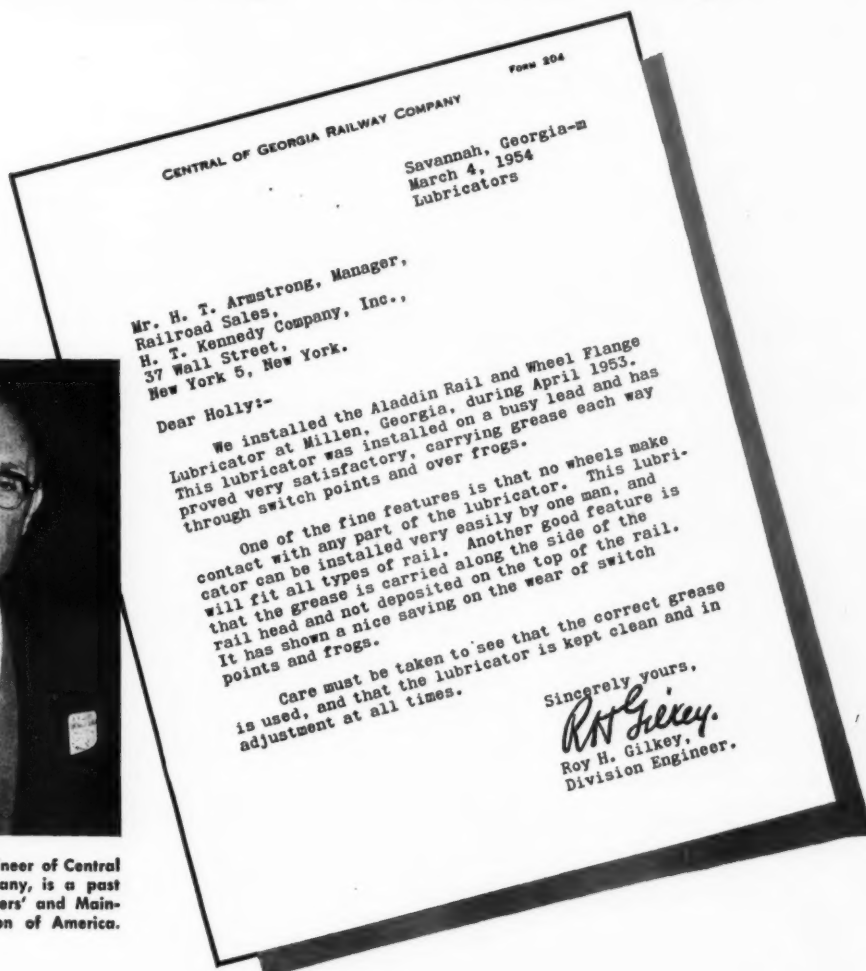
A study was made of the detailed plans of the "housed switch point" used by the New York Rapid Transit and the Chicago Transit Authority. This device, which is very heavy and expensive, fits over the open switch point and is a continuation of a guard rail approaching the point. The manufacturer's chief engineer advised us that this device had been designed to prevent derailments at switches and the resulting damage to the structures of subways and tunnels. It has not been adapted for use at spring switches or on steam railways.

An opinion has been expressed, perhaps correctly, that there would be less wear on the open switch point when trains trail out of sidings, through spring switches, at the maximum permissible speed for the turnout. The reason given was that there would be less movement of the point toward its normal position between passage of car trucks. It was stated that there would be a considerable difference in the amount of switch-point wear when heavy tonnage trains are able

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to move through these switches at speeds of from 20 to 25 mph as compared to movements made at speeds of from 5 to 10 mph.

After experimenting, we decided that there should be no deviation from the manufacturer's recommendation as to the type of oil to be used as a buffing agent in the spring-switch mechanism, this recommended oil having proved satisfactory under all weather conditions.

We found that if the switch-point throw was reduced to 3 in., the side of the point would be struck by the wheel on the high-speed run, and therefore decided against reducing the throw to anything less than our standard 4½ in.

Sampson-type switch points have been installed at three locations and are being closely observed in action. They have not yet been in track a sufficient period of time to point up a conclusion but we expect them to last much longer than ordinary points based on their service records at other locations.

Some second-hand switch points, having ample stock back of the worn point, are being fitted with manganese switch-point tips by a manufacturer. When returned they will be installed in selected locations and their service records will be closely watched.

The spring-switch mechanism used on the IC is designed to close the point in from 12 to 15 sec. The manufacturer can produce such a device in which the overall closing time may be increased to from 20 to 30 sec by slowing the first 2 to 2½ in of the closing movement and

still provide for fast final closure, to insure a tight fit between the point and the stock rail under all conditions. Two of these mechanisms are now being prepared for test. One of these will slow down the initial 2 in of closing movement and provide an overall closing time of 20 sec, the other, following the same pattern, will provide a total closing time of 30 sec. When these devices are received they will be installed at selected locations and the wear of the respective points will be compared with the past performance of the points at these same locations.

Keep Clean and Lubricated

By F. W. BILTZ

Chief Engineer, Reading, Philadelphia

To withstand the repeated slapping blows imposed during the passage of successive car trucks, heavier construction is employed in the design of spring-switch points than in the conventional point of split switches. The necessity of overcoming the inertia of the heavier weight, due to the 1½-in reinforcing strap, is responsible for the accelerated abrasion of the head metal of the point, and consequently we cannot anticipate the same service life as for the standard split switch.

While the buffer mechanism slows the return of both points to normal position and minimizes the slap under succeeding trucks, until the secondary mechanical spring action takes place, the impact of wheel

flanges results in abrasion of the gage side of the open point and the outside of the normally closed point.

Elementary, but very important, in retarding the wear is the keeping of the spring switch clean and lubricated. The points should bear evenly on all ties and, when there is any evidence of a tie hanging away from the stock rail or point, that tie should be tamped up immediately and the switch plate placed in contact with the point to insure even bearing.

Heat treatment of points will retard the wear and insure their longer service life. Wear can also be reduced by lubrication which can be provided either by a track lubricator or by the application of grease by hand, should the necessary manpower be available at the site.

It is the consensus that roller bearings help somewhat to lengthen the life of the points of a spring switch, but the primary function of the roller bearing is, of course, to assist the buffer mechanism in returning the points to their normal position after the passage of the car trucks. Some roads permit the use of an L-shaped lug at the heel of the point to assist in the proper hinging of the joint. The condition of the thimbles in the heel bolts, proper installation and maintenance of rail braces and, as a matter of fact, proper care of all of the elements of the spring-switch installation are essential in keeping the rate of wear to a minimum and extending the service life of the points.

Concrete Encasement of H-Piles

Where steel H-piles are used in bridge substructures under what conditions is it necessary to protect them with concrete encasement? Explain.

Type of Exposure Governs

By E. F. CROXSON

Assistant Engineer of Bridges,
Southern, Charlotte, N. C.

The necessity for concrete encasement of steel H-piles in bridge substructures depends upon the type of exposure encountered. In discussing this question the piles may be divided into four types:

- (1) Piles that are driven entirely below the surface of the ground.
- (2) Piles driven into the earth and extending into the at-

mosphere for support of a superstructure.

- (3) Piles, driven through water into the earth, which do not extend above the surface of the water.
- (4) Piles that are driven through water into the earth and extend above the water into the atmosphere.

The first type generally requires no protection unless exposed to ground water polluted by sewage or acids.

The second-type pile, except in arid territory, corrodes more rap-

idly at the ground line, and concrete encasement can be used to advantage to protect the vulnerable area. The encasement should extend into the ground 2 or 3 ft. The area below the encasement requires no protection, except where polluted ground water is present. The surface above the encasement, where subject only to atmospheric corrosion, may be maintained by a protective coating such as paint, bitumen or petrolatum. This type of pile is often totally encased above ground, for structural or esthetic reasons, and of course this eliminates the necessity for protective coatings.

Piles of the third type are usually submerged at all times and there is not much chance for oxygen, which causes corrosion, to reach the steel. Here again there may be exposure to polluted water, either

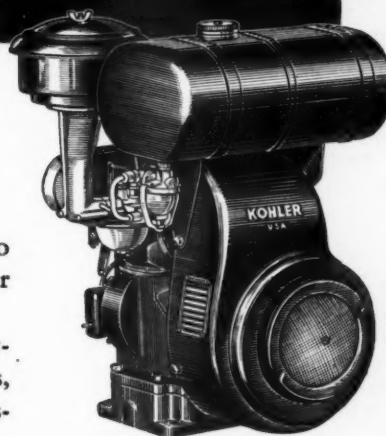
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|------|-----------|
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| K160 | 6.6 H.P. |
| K330 | 11.8 H.P. |
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bacterial or acid, and there may also be abrasive forces which require attention. Concrete encasement, of the vulnerable areas, may be applicable for any or all of these exposures, although it is not necessarily the only solution. Where it is used, it may be precast on the pile before driving.

The fourth type of pile should be

concrete encased from two feet beneath low water to an elevation sufficiently above high water to avoid wave action. If protection from abrasive forces or polluted water is required, the encasement should extend into the ground. If in salt water, it might be desirable to totally encase the steel for protection against salt spray.

The above is not intended as a comprehensive treatise. There are other types of exposure, such as polluted atmosphere and electrolytic corrosion, and also other solutions for the different degrees of exposure.

Each one should be handled with due regard for all the known factors.

Alligatored Paint

What causes paint to "alligator?" How can this be avoided? Explain.

Apply Compatible Paint

By ARNOLD J. EICKOFF

National Lead Company, Research Laboratories, Brooklyn, N. Y.

Before we begin some of the "whys" and "wherefors" it might be helpful to consider a few definitions and review briefly certain film defects akin to alligating such as checking and cracking. Checking and cracking are distinct from alligating in that checking is indicated by minute surface breaks in the film. These breaks do not go through to the adjacent paint film. Cracking is indicated by a film break which extends through to the substrate (metal, wood, etc.). Sometimes these defects are difficult to identify. In that event the use of a magnifying glass of 10 diameters is suggested.

Alligating is evidenced by wide cracks over the whole surface. These cracks do not visually go through to the substrate—hence they are confined to a single layer of film.

Walker and Hickson, in "Building Material and Structure Report," No. 105, U. S. Department of Commerce, pp 113-115, state: "Alligating may begin as checking or cracking but the break tends to grow wider at the bottom as well as at the top. The top coating contracts, thus exposing portions of the undercoat. In the typical extreme cases of alligating, the islands of coating between interlacing breaks have not only contracted in area but have increased in thickness and consequently have often become wrinkled."

The most common cause of alligating is the application of a hard type of paint film over a film that is much softer. The soft undercoat may be the result of improper formulation, the use of a soft drying pigment like yellow ochre, or the use of large amounts of straight color pigments. Alligating may also be aggravated by the repeated application of thick films of a paint to insufficiently dried films. Wood, such as southern yellow pine, which

may have a high content of resin, sometimes promotes alligating if the painted areas face excessively hot summer sun. In such cases the temperature may go as high as 180 deg F. A sudden drop at night can produce a temperature change of approximately 100 deg F in a matter of 12 hr or less. Continual heating and cooling under such conditions accelerates alligating.

Special decorative finishes are sometimes called alligating lacquers. In these finishes, the phenomenon of alligating is used for special effects. This effect may be produced by properly formulated lacquers. The skill of the operator is a prime factor.

The continued application of paint over an alligatored surface does not remedy the problem. The peculiar mottled effect gradually shows through the top coat of paint.

The most effective remedy is to remove all of the old paint by carefully using a blow torch, a specially made electric iron, or a solvent type paint and varnish remover. When the substrate is clean and dry, the proper selection and application of compatible paint products with similar film properties invariably results in a paint system which gives satisfactory appearance and optimum protection.

Corrosion-Inhibiting Chemicals*

When should corrosion-inhibiting chemicals be added to the water used in diesel engine-cooling systems. Why?

Individual Treatment Most Used

By J. L. GIBBONEY

Vice-President, National Aluminate Corporation, Chicago

Ideally, all the water added to the diesel cooling systems should be taken only from a supply or supplies to which the cooling-system treatment has already been propor-

tioned at the correct dosage. Under such an arrangement the minimum of checking and policing is necessary to insure adequate treatment in each diesel cooling system, which in turn insures freedom from the destructive and costly corrosion occurring when the treatment is not maintained at the recommended level.

If, for example, a railroad operates 50 diesel units which take cooling water at three locations, the

installation of a simple treating plant at each of the watering spots to proportion treatment into a way-side storage tank would mean that only these three storage tanks would have to be sampled and tested regularly to provide good control. Further, only these three points would, theoretically, have to be checked with respect to the mechanics of application and supplies of chemical.

In actual practice it would be desirable with such arrangement to make an occasional test of the treatment concentration in each diesel cooling system as a cross check to insure that untreated cooling water is not being added at an unknown point. Note, however, that

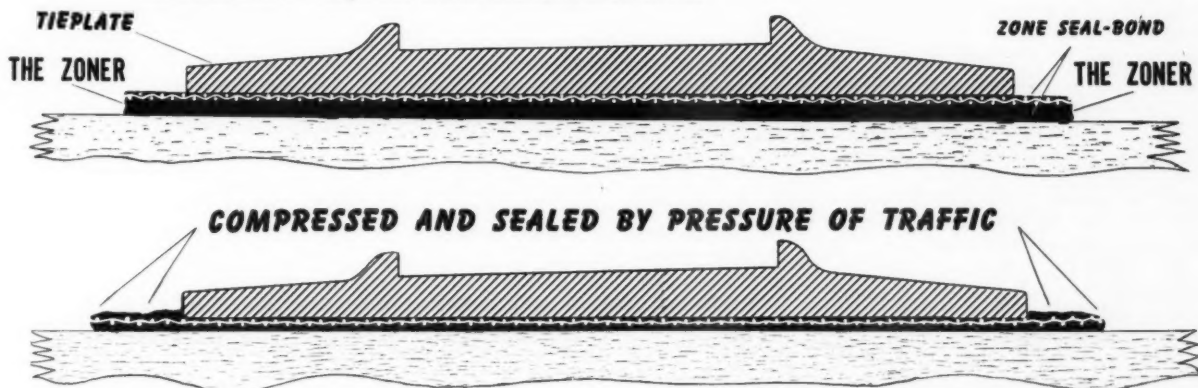
* A number of additional answers to this question, withheld because of space limitations, will be published in an early issue.

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if untreated water is taken at one or more points in addition to the three treated locations, it becomes immediately necessary to make frequent regular checks of cooling systems of all the diesel units which could possibly take water at the untreated points (adding treatment as required) or to institute an unfailing method of adding treatment to those units whenever untreated water is taken.

Since on most roads there exists a large number of points at which cooling water may be taken, requiring a relatively large number of treating plants, the installation and maintenance of which would run into considerable expense, only a few roads have set up the ideal condition of treating all the cooling water before it is delivered to the diesel units. A large majority of roads have set up the system of regular and frequent testing of the cooling systems of the individual units at the time of regular servicing, adding treatment as required directly to the unit. This method has several serious disadvantages including the need for constant round-the-clock policing and the possibility of an engine being dispatched before the cooling system is checked or necessary treatment added. It also means that, unless the treatment level is purposely carried well above the recommended minimum, the treatment may be low for a period before the unit is checked with corrosion the resulting possibility. The practice of overfilling the cooling systems is very common. With pretreated water this results only in some waste of treated water; with untreated water, the treatment in the system is seriously diluted.

The chief disadvantage of treating the diesel units individually is the difficulty in applying the treatment to the system. A usual practice is to add the treatment through the roof fill-up pipe, requiring climbing to the roof of the unit. Practically none of the units have provision for adding treatment other than from the roof. A few roads have installed simple bypass feeders around or on the discharge side of the cooling water circulating pump inside the unit. Such installations are inexpensive and provide a much safer and more convenient means of treating.

While ideally all of the water added to the cooling systems should already contain proper dosage of treatment, as noted above, most roads apply the treatment to the individual cooling system. Where

adequate provision is made for regular testing and maintenance of treatment level on these roads, completely satisfactory results are obtained.

Essential to Operation

By E. R. GLOVER

Technical Director, Railroad Department,
Dearborn Chemical Company, Chicago

Corrosion inhibiting chemicals should be added to the water used for cooling the diesel engine during its initial test run and be maintained at recommended concentration in the cooling water constantly thereafter. Water is nature's most plentiful solvent and its corrosive tendencies must be corrected to preserve the materials of construction which it contacts in cooling the diesel engine.

The diesel engine is designed to operate to the limit of mechanical wear with a minimum of maintenance. A proper cooling system provides one of the means of prolonging engine life by maintaining metal temperatures such that lubrication can effectively reduce friction, consequently reduce wear. The coolant must not destroy by corrosion the materials it contacts in order that the maximum mechanical life of those materials may be realized.

Iron, in various alloys, is the major material of diesel engine construction and therefore is most important to preserve. Iron also is corroded by any natural water supply.

Therefore corrosion-inhibiting chemicals are designed primarily to prevent loss of iron. Invisible, porous oxide films form immediately when iron is exposed to air. This film preserves the metal if it is not disturbed. When water seeps through the pores of this oxide film, the underlying iron is dissolved and a vicious cycle is started. The corrosion product, initially in solution, eventually precipitates by reaction with dissolved gases in the cooling water and the water itself, and the flow of water makes available fresh, aggressive water to pursue the attack.

An effective corrosion inhibitor must block this attack. Chromates do so by chemical reaction with iron and water to form a complex insoluble mixture which seals the pores of the iron oxide film and provides a barrier holding aggressive water away from the iron. Maintenance of a residual chromate concentration will insure that this

uniform continuous sealing film will be kept in place to bar water from the iron.

Stress, vibration, and water erosion will tend to break and remove the protective film, but the residual chromate concentration will immediately work to repair the damage. Because the initial iron oxide film (formed by exposure of iron to air) is protective and needs only to have its pores sealed to provide increased protection, it is therefore important to prevent metal loss from the birth of a useful metal part and maintain that protection constantly to guarantee long life. Failure to combat corrosion from the start only makes the job more difficult when it is started later. By that time, corrosion will have increased the area to be filmed; metal surfaces will be rough and irregular, increasing the tendency for film breakage.

Failure to arrest corrosion will also result in more maintenance jobs to do. Corrosion products will be carried into sections of the cooling system where they will lodge. They may plug radiator tubes and reduce cooling efficiency. Cleaning them is a costly, time-consuming job.

Corrosion products may accumulate in the water passages in or around the cylinder liner, prevent proper cooling of the metal and result in its failure from overheating.

While iron is the major component, several other metals are normally used in the diesel cooling system. Copper, tin, zinc, aluminum, nickel, molybdenum and phosphorus are components of alloys found in the system. The corrosion inhibitor designed for protection of iron must also protect other metals. Many natural waters have been found to remove zinc from alloys, and highly alkaline water will attack brass and aluminum.

Fortunately chromate inhibitors in a properly controlled alkaline solution provide near-perfect protection of the non-ferrous metals also. Incorporation of additional inhibitors for specific metals enhances protection afforded by proprietary corrosion inhibitors.

The corrosion inhibitor must also have no effect on organic materials used for sealing the cooling water system. Carbon, rubber, and synthetic organic materials as well as metals are used for this purpose. These sealing materials are designed particularly to function in contact with natural waters and the

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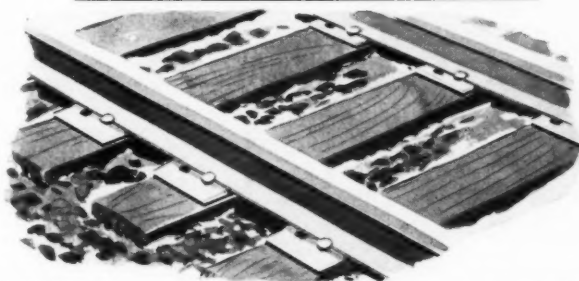
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What's the Answer

corrosion inhibitor must have little if any effect on them.

There is considerable difference in the aggressive character of water supplies. Some measure of protection against corrosion might be expected from scale formed by using hard waters. However, scale forma-

tion is not uniform and usually is porous enough to permit water to seep through and cause corrosion underneath the scale. In addition to the undesirable insulating effect of scale, corrosion in localized areas may even progress at extreme rates.

All railroads using diesel locomotives agree that corrosion inhibiting chemicals must be added to the cooling water, regardless of source,

to preserve the materials of construction, maintain maximum operating efficiency, and reduce maintenance costs. Diesel engine manufacturers have long recognized the importance of preserving the cooling system, and they tend to recommend the use of low mineral content cooling water made nonaggressive by use of an effective corrosion inhibitor.

Diesels and Weed Burning

To what extent, if any, has the introduction of diesel-operated trains increased or decreased the necessity of burning weeds on the right of way? Explain.

Burning Is Expensive

By L. C. BLANCHARD

Roadmaster, Chicago, Milwaukee,
St. Paul & Pacific, Minneapolis, Minn.

There are three principal reasons for burning right of way and, in the order of importance, they are as follows:

(1) To prevent uncontrolled fires from being started by locomotive sparks, or other causes.

(2) To prevent or minimize formation of snow drifts on tracks as a result of high vegetation adjacent to the track.

(3) To clean the right of way for the sake of appearance.

In the day of the steam locomotive, uncontrolled fires were frequently started by locomotive sparks which fell into dry vegetation on the right of way during the late fall and early spring months.

As a measure of control the track forces burned the right of way, and during the most critical time special coal was sometimes burned in the locomotives to lessen the danger from sparks.

With the advent of the diesel locomotive the danger from sparks has greatly decreased. There is still some possibility of fire starting from a carbon spark, or sparks from a brakeshoe application. Also there is the ever-present and dangerous cigarette. However, these dangers can be greatly exaggerated.

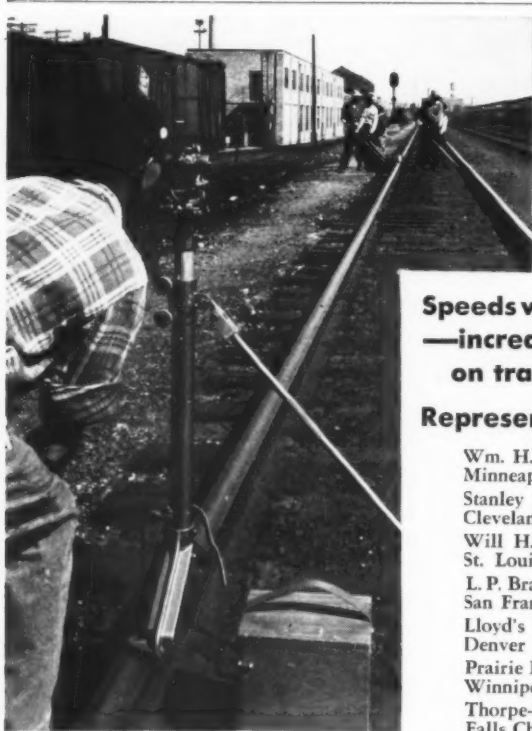
During a period of three years on a secondary main line in the Dakota's where diesel locomotives were operated exclusively, the right of way was not burned, except in spots for snow protection, and I do not know of a single fire which was caused by a carbon spark from a locomotive. The passengers were in air-conditioned cars where they could not flip cigarettes out of the windows. The train crews were alert to the dangers and were careful.

Burning right of way costs a lot of money, both in labor and in material damage. Foremen who hurry the job take calculated risks and do considerable damage to fence posts, telegraph poles, track signs and snow-fence installations. If no risks are taken the labor cost goes up. The best time to burn right of way is the best time to spot track in preparation for the winter freeze up.

It is also about this time when track forces are faced with the erection of several thousand lineal feet of snow fence.

It is important to rid the right of way of such vegetation as giant rag weed, sweet clover, sunflowers and hemp where it will cause snow to drift on the tracks. Such growth is usually found in isolated spots. Unless the weeds are extremely dry, mowing will prove more effective than burning.

A cleanly burned right of way lends itself to habits of good house-keeping and of course the appear-



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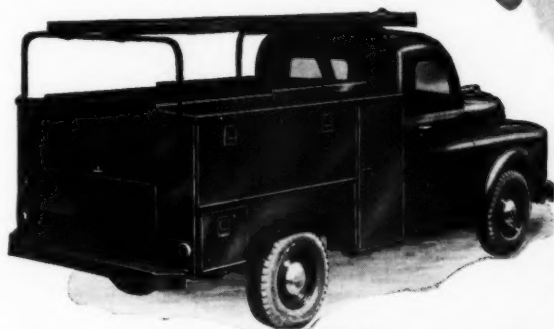
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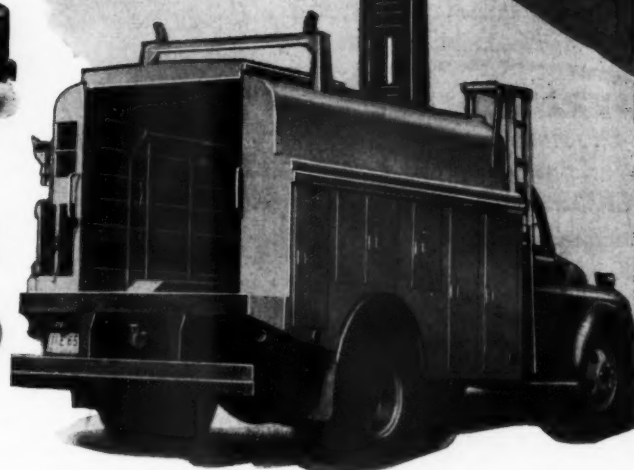
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What's the Answer

ance is enhanced particularly when the green grass comes forth in the spring of the year.

For those railroads that can afford to spend the money, I recommend that they continue to burn the right of way. For those who have to squeeze their dollars, I recommend they burn as little right of way as conditions permit.

Less Need for Burning

By B. F. McDERMOTT

Roadmaster, Chicago & North Western, Brookings, S. D.

There is no doubt that the introduction of diesel-operated trains has to a great extent decreased the potential right-of-way fire hazard resulting from the operation of steam locomotives. Steam locomotives threw sparks from the stack and hot cinders from the ash pans during operation. Locomotive grates were shaken and ash pans dumped on the tracks during stops. Although the book of rules re-

quired that enginemen thoroughly water down these hot cinders they would be fanned by the wind after the train had left, causing damage to track ties and fires in grass and weeds which had not been burned off the right of way.

My territory, which is located in eastern South Dakota and southeastern Minnesota, has been undergoing conversion from steam to diesel power during the past two years. During the past year, except for the occasional operation of one or two steam locomotives, it has been 100 per cent dieselized. I have not found one fire during this period which was caused by diesel locomotives. We have, of course, had a few fires but these were the result of other causes.

We must not overlook the possibility of fires starting from brake-shoe sparks and from hot carbon thrown from the stacks of diesel locomotives. However, in my opinion, such sources of fire are more or less remote when compared with the ever-present fire hazard of the steam-operated locomotive.

In this part of the country, particularly in the fall of the year, there is almost continual wind and this, coupled with the dryness of the vegetation, makes right-of-way burning a very hazardous job. Great care must be exercised by the track forces, the wind must be just right and even then burning can be done only on terrain adjacent to plowed fields. We have paid heavy damage claims because fire got away from the track forces and caused damage to hay stacks and fields and in some instances even endangered farm buildings.

In conclusion, I would say that the introduction of diesel locomotives has lessened the need for burning the right of way. However, where burning can be safely undertaken it should be done. This is especially true on high ridges which parallel the track and at locations where high weeds catch snow in cuts, etc.

Burning Is Important

By F. B. KELLY

Roadmaster, Soo Line, Dresser, Wis.

On our road, it has been the practice to burn as much of our right of way as we can in the fall and spring. We are not, as yet, a 100-per cent diesel-operated railroad, so the policy of burning or not burning on that basis has not arisen. We have a very heavy

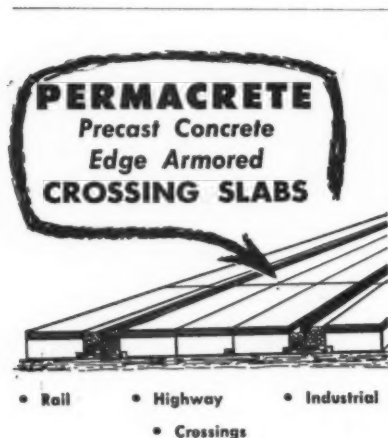
growth of weeds and brush. Our burning, therefore, has a threefold purpose: It cuts down fire hazards; kills and retards the advance of noxious weeds; and kills some of the brush. Just how successful we are in killing the brush in this manner is questionable.

We have had many fires which were set by steam locomotives. In most cases, where the right of way has been burned, these fires have been less serious, or more easily controlled than where the right of way has not been burned. Except in cases of high winds, most of the fires start on the railroad's property, and there is no question as to the necessity of destroying weeds, etc., where steam locomotives are operated. Fires in our territory, which run through farm lands and heavily wooded areas, can be and often are very expensive. Not only are land products endangered, but also buildings, homes and even villages.

The entrance of the diesel into the picture reduces one of the fire hazards, but the necessity of burning weeds on the right of way is still as great as it ever was for the following reasons:

First the human factor. We know how machines perform and can predict what they are supposed to do, but it still takes men, and the same men are running the diesels that used to run the steam engines. Men who in many cases insist upon throwing lighted cigarettes out of diesels and cabooses, although fire-proof containers are in front of them and in some cases more accessible than the window or door. We still have the same men working on our tracks and riding our motor cars as we had before. The public still crosses our tracks and trespasses on our property as before. It is true, we put up notices and posters, and write articles about how so much property and life is lost because of the careless person, nevertheless, people go on being careless and burn up prairies and forests.

This was very strongly brought out to me as I was making a trip by train over the line. We passed a fire patrolman in the clear with his motor car. The flagman on the train asked me who that man was and what he was doing. I told him that he was the fire patrolman and that we were required to run a patrol in dry weather on a certain portion of my district, and, as he knew, it was tinder dry at that time. We discussed the dangerous practice of trainmen throwing lighted cigarettes out of the windows of a ca-



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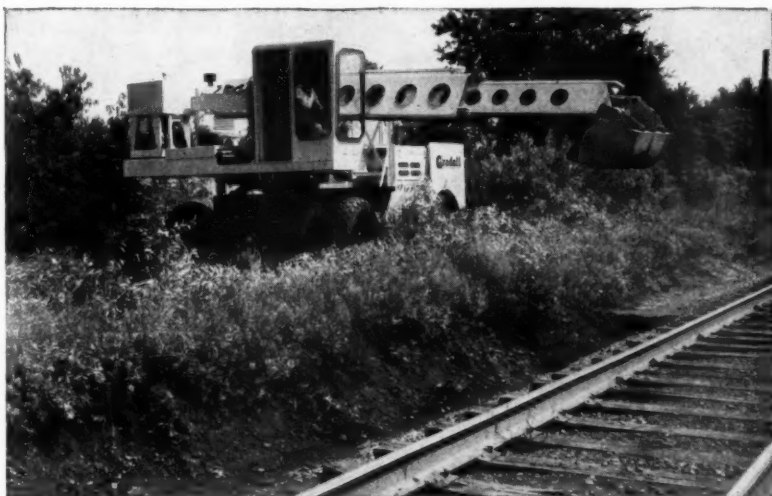
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RAILWAY TRACK and STRUCTURES

SEPTEMBER, 1954

81

What's the Answer

boose. The flagman suggested that a notice put in every caboose would be in order, pointing out how dangerous fire was at the present time and warning trainmen to put their cigarettes out. This flagman then proceeded to light up, take a few puffs on his cigarette, and then throw it out the door without making any attempt to put the fire out. What more could I say? It seems as though all of this is for the other fellow. I wonder how many fires blamed on the steam locomotive were caused by throwing lighted material off the trains.

There is also the danger from hot boxes. How the burning material is handled by the trainman who pulls it from the journal box and distributes it over the right of way is important.

Then we have the danger from fusees. Many times a fusee thrown from a moving train does not stay between the rails, but bounces off onto the right of way. We had a fire that started from a thrown fusee, which landed on a portion of the property that had not been burned off. Fire started immedi-

ately and serious damage was averted only because help was quickly rounded up to put the fire out. Trainmen to a certain extent can use care in handling fusees, but the use of these signals cannot be limited to territories where there is no fire danger. It is a good thing that we do not have a fire every time one of them lands on combustible material.

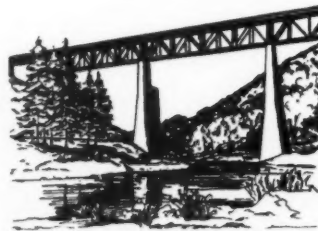
Secondly, even though a railroad may be pretty well dieselized there is always the chance an odd steam engine may be run over the line, or that steam work equipment may be used in certain localities and set a fire that could be disastrous.

In the third place, vegetation tends to grow and spread and a few noxious weeds, if not discouraged by being burned off every so

often, could multiply rapidly and create greater problems of control than otherwise. Where weeds are allowed to grow unhindered, brush also is sure to grow in greater quantities, seeded by other brush on or off the right of way.

Fourthly, diesels throw a certain number of carbon sparks. I do not know whether these will cause a fire or not. We had a fire on my district where only diesel engines had been run. This could have been caused by some other factor, and more than likely was. However, I do know that gasoline driven engines can cause fires by throwing sparks out of their exhaust pipes. This spring there was a case where a tractor started a fire in a field and wooded area near one of the villages along my district. We have gasoline driven machines which work along our right of way and could start a fire there as well as in a field.

Just because we burn off the right of way does not mean that we will not have fires, but it should reduce their number and seriousness and I advocate that we still burn off the railroad property even though one of the fire hazards is being or has been eliminated.



The "PELICAN" PUMP

THE WONDER PUMP OF THE *Lightweight Field*

AND THE LOWEST PRICED TWO-INCH PUMP OF ITS CAPACITY ON THE MARKET!

The "Pelican" self-priming centrifugal pump challenges any pump its size and type to equal it in performance.

Quickest priming, Fastest pumping, Most dependable

Suction Lift - up to 25 feet, sea level.

Automatic Self-priming - no ports, no valves.

Portability - weighs only 70 pounds, provided with carrying handle for easy portability.

Non-clogging - any muck or solids that will pass the intake strainer will pass through the pump.

Simplicity - the impeller, the only moving part, is mounted directly on the engine shaft and operates at engine speed.

The "Pelican" is a reliable, trouble-free, general utility pump small enough for easy handling and large enough for a wide range of applications in municipal utility field.

Write for bulletin No. 7-LW-13.

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8,000
G.P.H.**

FOUR GORMAN-RUPP LIGHTWEIGHTS

The Midget, 1½" - wgt. 62 lbs. 5850 g.p.h.
Primes in 75 sec. at 25 ft. suction lift.

The Pelican, 2" - wgt. 70 lbs., 8000 g.p.h.
Primes in 99 sec. at 25 ft. suction lift.

The Hawk, 2" - wgt. 110 lbs., 11,000 g.p.h.
Primes in 47 sec. at 25 ft. suction lift.

The Eagle, 3" - wgt. 117 lbs., 18,000 g.p.h.
Primes in 79 sec. at 25 ft. suction lift.

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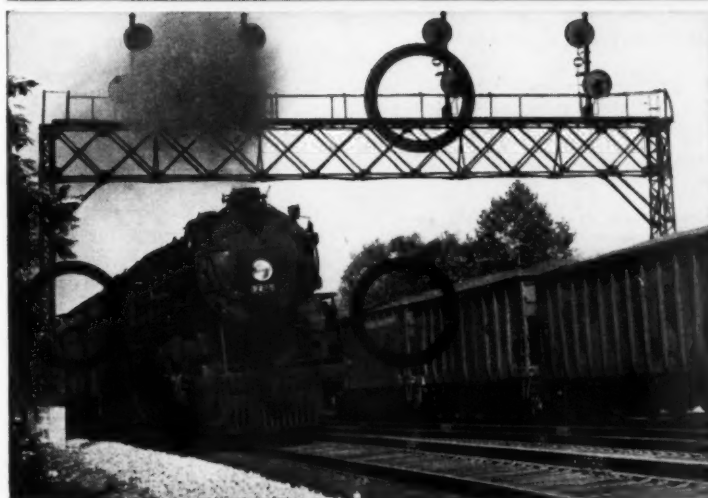
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Available In All Colors, Aluminum and White

Lasts longer applied directly over rusted surfaces!



Request Your **FREE** Copy of
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Catalog Now!

New Products

(Continued from page 67)

easily controlled. Because friction is greatly reduced, fewer men are required to power the driving rail.

The unit is reported to be especially useful in adjusting rails in tunnels, on bridges and on main lines where speed is important. The manufacturer recommends the use of the dollies in conjunction with Simplex Rail Expanders. As a rail is bumped, the expander is tightened, thereby preventing the

bumped rail from slipping back.

Known as the Simplex Model 72 Rail Dolly, the unit weighs 16 lb and has overall dimensions of 8 in by 8½ in by 3½ in. in height. The roller is 2 in. in diameter and 7½ in long.

INSTANT-SETTING CEMENT

A HEAVY, dense cement, which is reported to dry without shrinking into a mass of considerable strength, has been announced by

the Garon Products Company, Philadelphia, Pa.

Called Garonite, the oil-resistant, high-strength material is prepared for use by adding water in the correct proportion. It is designed for use in anchoring bolts, posts, handrails, etc., and for grouting machinery and repairing holes in concrete floors. The manufacturer reports that the cement is extremely fast setting and provides a compression strength of 5,000 psi after one hour, and 12,000 psi after twenty-four hours. The material is designed for use in these particular areas which are not subject to constant watering.



USE TIE PLATE LOCK SPIKES

for Minimum Annual Cost
of Ties in Track



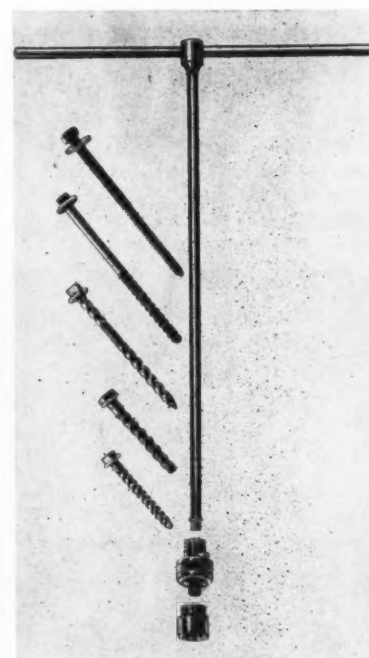
- hold gage
- prolong life of ties
- save maintenance expense

LOCK SPIKES hold tie plates firmly in place on cross-ties and bridge timbers. They are quickly and easily driven, or removed, with standard track tools. Driven to refusal, the spread shank is compressed by the walls of the hole. Tie plates are held against horizontal and vertical movement under spring pressure. Play between the spike and the hole is eliminated—gage is held and plate cutting is overcome.

LOCK SPIKES not only become integral with the tie plate, but also the lateral pressure by the legs against the sides of the tie hole, binds the spike in the tie. This unique feature gives tight adhesion between tie and plate.

LOCK SPIKES were first installed in 1947. Since they have been in track, no maintenance whatever has been required. Cost of installing in track is low and comparable to cut spikes. The advantages and saving only found in Lock Spikes reduces the annual cost of ties in track and maintenance expense to a minimum. We invite your investigation.

BERNUTH, LEMBCKE CO., INC.
420 Lexington Avenue, New York 17, N. Y.



WRENCH FOR DRIVE AND LAG SCREWS

A RATCHETING, tee-handle wrench for drive-screw spike removal and lag screw removal and replacement has been announced by Snap-on Tools Corporation, Kenosha, Wis. The wrench, which is especially designed for use in track, bridge and building, and signal department work, consists of three parts—a tee handle, a reversible ratchet and a socket of appropriate size to meet the particular need.

The manufacturer reports that the use of the patented Loxocket holds the socket, ratchet and handle securely together as one unit, thereby increasing the safety of operation.



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Every Fairbanks-Morse demountable steel wheel conforms to one standard of quality — the highest!

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Get rid of those expensive specialty rigs that are used only once-in-awhile. They run up equipment inventory costs, have high operating and maintenance due to lack of use -- present costly labor problems. With a mobile T-35 Carrier BANTAM or new C-35 Crawler BANTAM you've got a multi-purpose tool that lifts, excavates, trenches, pile drives, loads and unloads bulk material, pours concrete - does them all efficiently, quickly, at lowest operating and maintenance costs in the industry.



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- "Over 8 year period owning 4 Bantams total maintenance cost averaged \$200 per year."
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☐ Back Hoe ☐ Dragline ☐ Pile Driver
☐ Shovel ☐ Backfiller ☐ Magnet ☐ Grapple

THE MONTH'S NEWS Railway Personnel

General

John W. Staley, supervisor of track on the Southern at Cochran, Ga., has been appointed assistant trainmaster at Asheville, N. C.

J. W. Demcoe, superintendent of the Canadian National at Montreal, and formerly engineer maintenance of way for the Central region, has been appointed operation assistant at Montreal.

Clyde F. Meyers, terminal superintendent of the Lakefront Dock and Railroad Terminal at Toledo, Ohio, has been appointed general manager of the Toledo Terminal.

Frank J. Jerome, executive vice-president of the New York Central and an engineer through training and experience, has retired after 40 years service.

Mr. Jerome is a native of Painesville, Ohio, and is a graduate of Williams College and the Massachusetts Institute of Technology. He began his railroad career



Frank J. Jerome

with the NYC in July 1914 as a transitman at Elyria, Ohio. In 1917 he was appointed assistant engineer and later served as trainmaster and division engineer until he was appointed maintenance-of-way engineer on the Michigan Central in 1938. He was promoted to assistant chief engineer at Chicago in October 1939 and was named chief engineer there in April 1943. He was appointed assistant to the executive vice-president at New York in 1945 and served in that position until September 1947 when he was named vice president of operations and maintenance. He was appointed executive vice-president in January 1951.

Engineering

Henry W. Neubaumer, senior assistant division engineer on the Southern



◀ Close-up showing beading at the ends of the tie pads—indicating proper pad performance.

Bird Self-Sealing Tie Pads on new bridge ties. Pads are symmetrically placed with respect to the tie plates. ▼



Slash your bridge tie costs over 50% with BIRD Self-Sealing TIE PADS

HOW? BIRD Self-Sealing Tie Pads form a waterproof, dustproof seal on the tie that protects the vulnerable area under the plates and around the spikes. Mechanical wear and plate penetration are eliminated. This feature is most important on bridge ties which are the most expensive of all ties. *It's a fact:* only two years of additional tie life (over normal expectancy) will more than pay the cost of BIRD Self-Sealing Tie Pads. Insist on a tie pad which will provide an *effective* seal.

YOU GET 50% or more extra tie life from new ties.

YOU GET at least twice the normal remaining life expectancy from old ties that can be added to a smooth surface of sound wood.

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WHERE?

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WHEN? Start now. Write today to BIRD Tie Pads, Dept. HTS-9, East Walpole, Mass.

BUY THE BEST



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Railway Personnel (Cont'd)

Pacific, has been named division engineer, Coast division, with headquarters at San Francisco. **Charles E. Neal**, general track supervisor at San Francisco, has been named division engineer on the SP's subsidiary, the Northwestern Pacific, with headquarters at San Rafael, Calif.

W. P. Hendrix, assistant engineer in the office of the chief engineer maintenance of way, Western region, on the Pennsylvania, has been appointed assistant to the chief engineer, Central region, at Pittsburgh, Pa.

J. S. Nelsen, levelman on the Chesapeake & Ohio at Grand Rapids, Mich., has been promoted to assistant engineer at Detroit.

B. F. Nauert, office engineer for the Terminal Railroad Association of St. Louis, has been appointed valuation engineer.

Herbert C. Fox, division engineer on the Southern at Greensboro, N. C., has been appointed to the newly created position of process engineer at Atlanta, Ga.

C. W. Bowers, assistant chief engineer on the Savannah & Atlanta, has been appointed chief engineer, succeeding **E. A.**

Bleakley, who has retired because of ill health. **Roy I. Kirchner**, engineer maintenance of way, has also retired from active service at his own request. The position of assistant chief engineer has been abolished.

Raymond H. Miller has been appointed principal assistant engineer on the Bangor & Aroostook at Houlton, Me., succeeding **Palmer H. Swales**, whose appointment as assistant to mechanical superintendent was announced recently (RT&S, Aug., p. 66).

J. H. Adams, designer on the Chesapeake & Ohio, has been promoted to assistant engineer with headquarters as before at Richmond, Va. **Eugene Judd**, assistant cost engineer at Peru, Ind., has been transferred to Richmond. **I. M. Simmons**, assistant cost engineer at Hopetown, Ohio, has been transferred to St. Albans, W. Va. **B. C. Richmond**, rodman at Huntington, W. Va., has been advanced to assistant cost engineer at Hopetown, and **E. H. Ellison, Jr.**, instrumentman, has been advanced to assistant cost engineer with headquarters continuing at Peru.

Edwin R. Crick, accounting and valuation engineer on the Pittsburgh & Lake Erie at Pittsburgh, Pa., has retired after 21 years of service.

Daniel F. German, formerly structural engineer for the Bechtel Corporation, has been appointed assistant chief engineer for the Pittsburgh & West Virginia at Pittsburgh, Pa.

J. H. Brown, roadmaster on the Frisco at Chaffee, Mo., has been promoted to the newly created position of assistant division engineer at Ft. Scott, Kan.

W. W. Arnett has been appointed assistant to division engineer on the Illinois Central at Paducah, Ky., succeeding **B. C. Ellis**, who has retired.

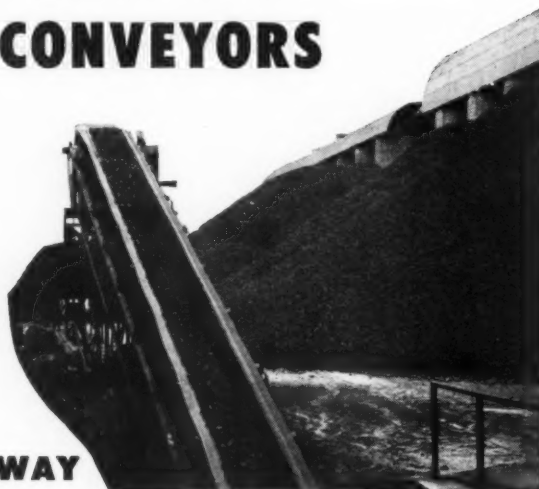
Everett E. Earl, assistant to chief engineer on the Southern Pacific at Los Angeles, has retired at his own request. A sketch of Mr. Earl's railroad career appeared in the March issue of *Railway Track & Structures*, on the occasion of his appointment as assistant to chief engineer.

William F. Poole, track supervisor on the Atlantic & Danville at South Clarksville, Va., has been promoted to the newly created position of engineer maintenance of way and structures.

Born October 25, 1906, at Linwood, N. C., Mr. Poole entered railroad service in 1919 as a section laborer on the Southern. After serving in various capacities on the Southern he resigned as track supervisor in 1948. Following service with the North Carolina Finishing Company and with the Wm. A. Smith Contracting Company, Kansas City, he joined the A&D in May 1951 as track supervisor.

Lawrence H. Jentoft, assistant to chief engineer—maintenance of way of the Erie at Cleveland, Ohio, has been appointed engineer maintenance of way at Jersey City, N. J., to succeed **Charles K. Scott**, who has retired after 41 years of service. A sketch and photograph of Mr. Jentoft was published in the January

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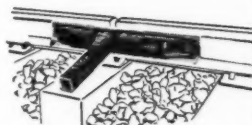
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Railway Personnel (Cont'd)

1954 issue on the occasion of his promotion to assistant chief engineer—maintenance of way.

Rowland H. Peak, Jr., who has been appointed division engineer for the Illinois Central at New Orleans, La., (RT&S Aug., p. 62), was born at Baton Rouge, La., February 27, 1918. He attended Louisiana State University and later the Massachusetts Institute of Technology where he received a B.S. degree in civil engineering in 1930. He began his railroad service with the IC in July 1940 as a chainman at McComb, Miss. He was later promoted to rodman and instrumentman on the New Orleans Ter-

minal division, and in April 1950 was appointed assistant division engineer, the position he was holding at the time of his recent promotion.

Charles R. Riley, engineer maintenance of way of the Eastern region of the Baltimore & Ohio, has been appointed chief engineer, maintenance, with headquarters as before at Baltimore, Md., to succeed the late **C. B. Harveson**. **C. E. Jackman**, division engineer of the Baltimore division, has been advanced to engineer maintenance of way of the Eastern region to succeed Mr. Riley. **J. A. Caywood**, division engineer at Cincinnati, Ohio, has been transferred to Baltimore to replace Mr. Jackman; **J. T. Collinson**, division engineer at Newark,

Ohio, has succeeded Mr. Caywood at Cincinnati, and **W. G. Stagg**, assistant division engineer at Baltimore, has been promoted to division engineer to replace Mr. Collinson at Newark.

Mr. Riley was born at Baltimore in 1908 and was graduated from Johns Hopkins University in 1929. He entered the service of the B&O in the latter



C. R. Riley

year, and after holding various positions in the signal and construction division up to the grade of field engineer, he was made assistant division engineer at Baltimore in 1943. In 1947 he was promoted to division engineer of the Baltimore East End division, and on January 1, 1953, was appointed engineer maintenance of way of the Eastern region.

Mr. Jackman was born at Byers, Ohio, on November 27, 1917. Following his graduation from Purdue University in June 1940, he entered the service of the B&O as a blueprinter at Cincinnati, where he subsequently served as assist-



C. E. Jackman

ant on the engineering corps and assistant engineer. In September 1947 he was advanced to assistant division engineer on the Newark division, later transferring to the Pittsburgh division at Connellsville, Pa. Promoted to division engineer in October 1950, Mr. Jackman held that position, consecutively, at Newark, Cincinnati and Baltimore.

Donald H. MacLeod, whose appointment as assistant division engineer on

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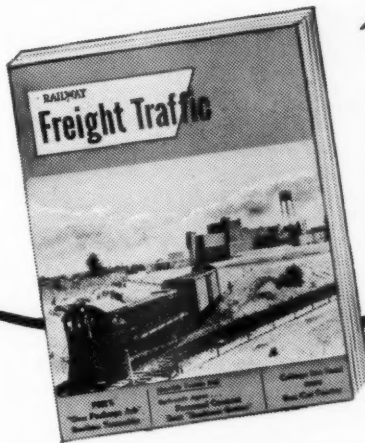
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Railway Personnel (Cont'd)

the Southern at Princeton, Ind., was announced recently (RT&S, Aug., p. 62), was born at Crozet, Va., on May 7, 1923, and received his B.S. degree in civil engineering from the University of Tennessee in December 1949. He began service with the Southern on February 1, 1950, as a student apprentice at Hickory, N. C., and was advanced to assistant supervisor of track at that location the following October. In January 1951 Mr. MacLeod was promoted to supervisor of track at Cochran, Ga., and in January 1952 was transferred in that capacity to Asheville, N. C. One year later he was named assistant trainmaster at Knox-

ville, Tenn.—the position he held at the time of his recent appointment.

G. P. Beach, assistant division engineer on the Canadian Pacific at Calgary, Alta., has been promoted to division engineer at Brandon, Man., succeeding **W. A. Smith**, who has been transferred to Vancouver, B. C. Mr. Smith replaces **R. H. Swanson**, who has been appointed assistant district engineer at Calgary. **G. L. Williams**, relieving roadmaster at Lethbridge, Alta., will succeed Mr. Beach as assistant division engineer at Calgary.

Mr. Beach is a graduate of the University of Saskatchewan, and began his railroad service with the CPR as a transitman at Brandon in 1946. He later

served as roadmaster at Lloydminster, Sask., before being appointed assistant division engineer at Calgary.



G. P. Beach



G. L. Williams

Mr. Williams joined the CPR in 1948 following his graduation from the University of Saskatchewan, and has held various positions in the engineering department since that time.

Track

R. D. White, assistant roadmaster on the Frisco at Oklahoma City, Okla., has been promoted to roadmaster at Chaffee, Mo., succeeding **J. H. Brown** whose promotion to assistant division engineer is noted elsewhere in these columns. **J. F. Christian**, student supervisor, has been named assistant roadmaster at Oklahoma City, succeeding Mr. White.

G. R. Gaspard, junior engineer of track on the Columbus division of the Pennsylvania, has been promoted to assistant supervisor of track on the Susquehanna division at Williamsport, Pa. **B. A. MacLean**, junior engineer of track on the Middle division, has been advanced to assistant supervisor of track on the Maryland division at York, Pa.

F. P. Pelter, Jr., assistant trainmaster on the Norfolk & Western at Bluefield, W. Va., has been promoted to assistant trainmaster-roadmaster at Grundy, Va., to succeed **J. W. Thomas**, who has retired after 49 years of service. **R. E. Barnett**, roadmaster at Jaeger, W. Va., has

*On Track...
Or On a Car-*

BURROS

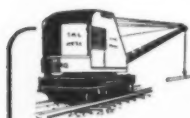
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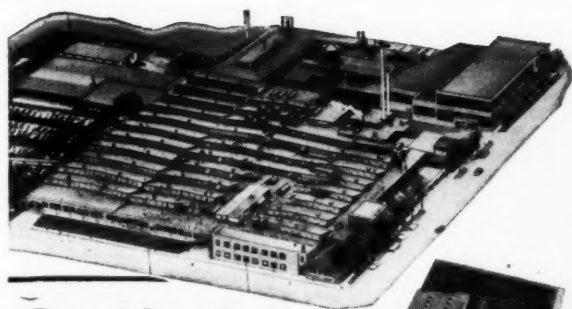
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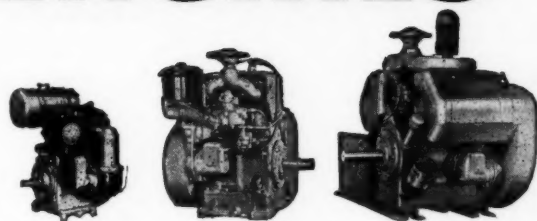
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It is also highly desirable that the manufacturer should have large financial resources and world-wide distribution in order to assure the purchaser of a dependable source of supply at all times, for engines, original factory replacement parts and competent service.

You get all of these things and much more when you specify Wisconsin Air-Cooled Engines.

As the world's largest manufacturers of engines within a 3 to 36 hp. range, it is our responsibility to protect as fully as possible the best interests of our customers throughout the world. That is why we say "Consider the PRODUCER as well as the PRODUCT when you buy ENGINES".

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RAILWAY TRACK and STRUCTURES

"WOLMANIZED" ...
clean pressure-treated
lumber.

Service-proved
to be odorless,
paintable, nonbleeding,
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Wolman Preservative Department

Pittsburgh 19, Pennsylvania



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Wolmanized
PRESSURE TREATED
Lumber

Stops Rot and Termites

SEPTEMBER, 1954

93

Railway Personnel (Cont'd)

been transferred to Fort Gay, W. Va., to succeed **W. S. Clement**, who has been appointed assistant trainmaster on the Sciota division. The positions of roadmaster on the Dry Fork and Tug Fork branches have been consolidated and **W. L. Goodman**, roadmaster at Williamson, W. Va., has been put in charge. **C. G. Hammond, Jr.**, roadmaster on the Tug Fork branch, has replaced Mr. Goodman at Williamson, and **E. B. Lee**, assistant roadmaster at Sardinia, Ohio, has been transferred to Welch, W. Va.

Lester I. Kemp, assistant supervisor of track on the Southern at Huntingburg, Ind., has been transferred to Lawrenceburg, Ky. **James G. Kelley, Jr.**, bridge and building mechanic on the Mobile division, and **Albert L. Ingram**, assistant supervisor of track at Salisbury, N. C., have been appointed assistant supervisors of track at Huntingburg. **Alvin E. Chambers**, assistant supervisor of track at Richmond, Va., has been transferred to Greensboro, N. C. **Firman B. Lindsay, Jr.**, has been appointed supervisor of track at Cochran, Ga., to succeed **John W. Staley**, who, as announced elsewhere in these columns, has been appointed assistant trainmaster at Asheville, N. C.

W. G. Kemmerer, Jr., junior engineer on the Pennsylvania, has been appointed assistant supervisor track on the New

York division. **C. M. Edwards**, supervisor track at Grand Rapids, Mich., has been transferred to Chambersburg, Va., and **H. C. Archdeacon**, assistant supervisor track at Lancaster, Pa., has been promoted to supervisor track at Grand Rapids, succeeding Mr. Edwards. **J. S. Collins**, assistant supervisor track at Jamesburg, N.J., has been transferred to Philadelphia, and **J. C. Miller**, junior engineer, has been promoted to assistant supervisor track at Jamesburg, succeeding Mr. Collins. **R. L. McMurtie**, supervisor track at Logansport, Ind., has been transferred to Oil City, Pa., to replace **H. A. Spruill**, who has been transferred to Lancaster. **R. P. Howell**, assistant supervisor track at Canton, Ohio, has been promoted to supervisor of track at Logansport, succeeding Mr. McMurtie. **C. L. Tracy**, assistant supervisor track at Aspinwall, Pa., has been transferred to Canton to replace Mr. Howell. **P. W. Amos**, junior engineer, succeeds Mr. Tracy as assistant supervisor track at Aspinwall. **H. F. Long** has been appointed supervisor track at New Castle, Pa., succeeding **D. D. Rake**, who has resigned. **R. D. Johnson**, junior engineer, has been appointed assistant supervisor track at Northumberland, Pa., replacing **E. C. Rudolph**, who has entered military service.

Curtis S. Conner, roadmaster on the Southern Pacific at Oakridge, Ore., has been named general track supervisor at San Francisco, succeeding **Charles E.**

Neal, whose appointment as division engineer on the Northwestern Pacific is announced elsewhere in these columns.

H. W. Wolcott, roadmaster on the Burlington, at Edgemont, S. D., has been transferred to Alliance, Neb., succeeding **W. G. Kerst**, who has retired. **C. O. Day** has been appointed roadmaster at Edgemont, replacing Mr. Wolcott.

J. P. Weiland, acting roadmaster on the Milwaukee, has been promoted to roadmaster at Sioux City, Iowa, succeeding **J. M. Murphy**, who has retired. **O. A. Timberman**, assistant roadmaster, has been promoted to roadmaster at Moberg, S. D., succeeding **A. F. Manley**, retired.

LeRoy G. Riehm, who has been appointed roadmaster on the Chicago & North Western at Winona, Minn. (RT&S, Aug., p. 66), was born at West Chicago, Ill., April 17, 1902. He attended West Chicago high school and joined the C&NW as a section laborer in August 1921. He was appointed supervisor of gatemen and flagmen in July 1935 and served as such until September 1943 when he entered military service with the 720th Railway Operating Battalion, sponsored by the C&NW. He was discharged in January 1946 and returned to the position of supervisor of gatemen and flagmen. In September 1946 he was appointed assistant roadmaster at Mayfair, Ill., and served there until being promoted to roadmaster at Redfield, S. D., in December 1947. He was transferred to Ironwood, Mich., in June 1953.

L. N. Uri, who has been appointed roadmaster on the Burlington at Orleans, Neb. (RT&S, Aug., p. 66), was born at Burchard, Neb., May 20, 1906. He began his railroad service with the Burlington as a section laborer at Violet, Neb., in April 1924. He was appointed foreman in January 1928 and served in that position at various locations on the Wyomere division until being appointed track supervisor in March 1948. He held this position until his recent appointment as roadmaster.

Bridge and Building

Claude E. Davis, whose promotion to general foreman bridges and building and water service on the Santa Fe at Dodge City, Kan., was announced recently (RT&S, Aug., p. 66), was born at Stuart, Iowa, September 27, 1903. He attended Drake University and the Missouri School of Mines before joining the Rock Island as a chainman at Dalhart, Tex., in 1925. He began his service with the Santa Fe in September 1926 as a chainman at Amarillo, Tex., and later served as rodman and transitman until being appointed assistant engineer in May 1944. He was promoted to roadmaster at Slaton, Tex., in March 1949, and in March 1954 he was named acting division engineer at Dodge City, the position he was holding at the time of his recent promotion.

Orval C. Rhoades, whose promotion to supervisor bridges and buildings on the Chicago & North Western at Wi-

"The Art of Track Lining"

Now available in pamphlet form

Many readers have requested reprints of the series of articles on this subject published in the May, June and July issues of *Railway Track and Structures*. Written by Leo C. Blanchard, a roadmaster on the Milwaukee Road, these articles tell you, step by step, in the language of the practical track man, how to do a better job of lining track.

To meet the demand for copies of these articles, they have been reprinted, all three in a single pamphlet, and copies of the reprint are now available, postage prepaid, at these prices:

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Editor

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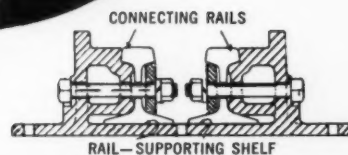
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4 JUMPS AHEAD OF COMPETITION...

Yes, the Universal Frog for yard service is built better 4 ways . . .

- It is made of an alloy electric cast steel that adapts itself to low cost electric or oxy-acetylene welding in track or shop.
- Tie plates are cast integral with the Universal Frog—an exclusive!
- Rail supports are cast integral on both ends of the Universal Frog—another exclusive!
- One-piece construction—no loose joints. Eliminates extra parts and cuts down maintenance costs.

THE UNIVERSAL FROG



HERE'S PROOF: Compare the cross sections of the Universal Frog with conventional types. Note the improved type rail joints, the patented supporting shelf, integral tie plates and rib construction.



THOROSEAL

Restored this

Filtration Plant



BEFORE

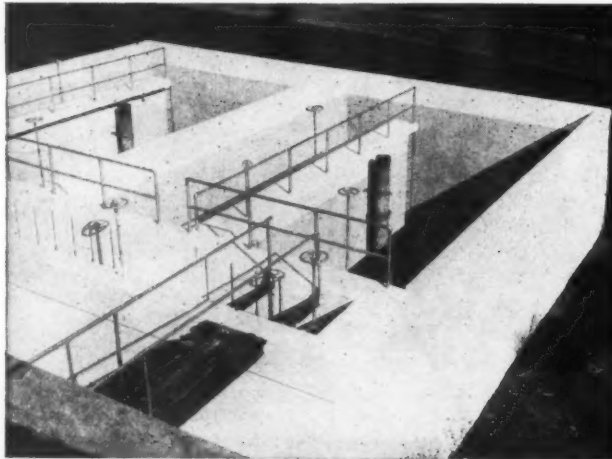
Example of complete break-down of masonry, due to penetration of water into body of concrete and action of frost in damp masonry.



It is amazing how THORO System products will correct a condition, such as shown in photograph. Concrete was sandblasted to remove all disintegrated material to sound concrete surface and reinforcing rods. Patching was done with THORITE Patching Mortar, bringing blistered areas to true and even lines, followed by two applications of WHITE THOROSEAL for protection.

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At minimum cost, almost 1/3 the cost of other methods, concrete restoration, patching and surface protection was completed with THORO System products on Filtration Plant in Keyser, West Virginia. Contractor: Standard Construction & Waterproofing Company, of Cumberland, Maryland.



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STANDARD DRY WALL PRODUCTS INC.
NEW EAGLE, PENNSYLVANIA



Railway Personnel (Cont'd)

nona, Minn., was announced recently (RT&S, Aug., p. 66), was born in February 1913 at Blair, Neb. He attended Wayne State College in Nebraska and began his railroad service on the Chicago, St. Paul, Minneapolis & Omaha in May 1929. Beginning as a B&B carpenter, he was promoted to B&B foreman in 1939, in which position he served until 1944, when he joined the Chicago & North Western as an assistant general bridge inspector. He was promoted to assistant supervisor B&B at Huron, S. D., in 1948, and later served in the same capacity at Fond du Lac, Wis., until being promoted to supervisor B&B in July 1954.

Special

James E. Cain, supervisor of work equipment on the Southern at Birmingham, Ala., has been appointed assistant superintendent of the roadway shop at Charlotte, N. C. **Harold M. Jessen**, supervisor of work equipment at Greenville, S. C., has replaced Mr. Cain at Birmingham, and **Carl B. Loflin, Jr.**, machinist apprentice, has been appointed supervisor of work equipment at Greenville, S. C.

Association News

Track Contractors To Meet at Chicago

The semi-annual meeting of the Associated Railway Track Contractors of America, Inc., will be held in Chicago on September 13, in conjunction with the annual convention of the Roadmasters and Maintenance of Way Association. The meeting will be held at 2 p.m. in the Conrad Hilton Hotel. The board of directors of the ARTCA held a meeting at Atlantic City in June at which plans were discussed for the advancement and accomplishment of the aims of the association. The group plans soon to issue a brochure, listing the member companies and their services. Directors of the association are: Don Charlton, president (T. F. Scholes Company, Reading, Pa.); J. B. Badger, vice-president (Stevens Construction Company, Cleveland, Ohio); J. H. Deckert, secretary-treasurer (Deckert Corporation, Chicago); Howard C. Rutledge (Royce Kershaw Company, Inc., Montgomery, Ala.); and E. D. Pearson (Pearson Company, Inc.).

Railway Tie Association

The 36th annual convention of the RTA will be held at the Mayflower Hotel, Washington, D. C., on October 20-22. The opening session will convene at 1 p.m. on Wednesday, October 20, and there will be sessions on both of



Tighter grip means better anti-creep protection

Specify double-jawed True Temper RAIL ANCHORS

● Only True Temper rail anchors have this double-jawed clamp that cannot slip . . . that's built to grip the rail at *two* points and hold it against creepage.

And True Temper rail anchors have a two-piece design (factory-assembled as a unit) . . . a design that permits better fulfillment of a rail anchor's function. First, the large clamp is designed to present maximum bearing surface against the tie. The clamp also contains the two jaws that grip the rail. The spring holds the clamp against the rail.

The result of this design is an anchor that holds better and is easier to install. There's less need for frequent inspection. There's less trouble with misalignment and creepage.

ADDITIONAL FEATURES

Apply with any standard striking tool
Not affected by frozen ballast
Greater protection in case of derailments
Impossible to overdrive
Better fit on worn or corroded rails
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TRUE TEMPER®

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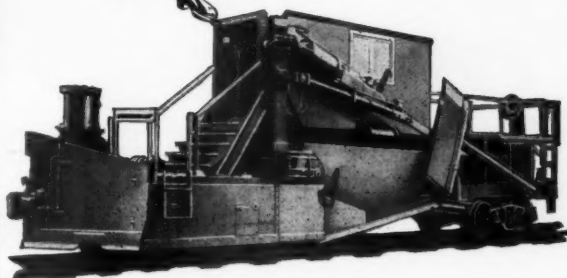
TRUE TEMPER RAILWAY TOOLS



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JORDAN Service



...at your service!

When you invest in a Jordan . . . you get us, too.

You get the attention of Service Engineers dedicated to giving the world's best service to the world's best construction and roadbed maintenance equipment—Jordan equipment.

Jordan Service means working with you for the best possible operation and maintenance of your Jordan equipment. It's a policy of helping you get the most out of your Jordan by keeping it at top efficiency during its long and useful life. Jordan Service is a program of persistent preventive maintenance. It's an investment we make to get your sometimes "ailing" Jordan back in working order . . . in short order.

Your Jordan Service Engineer follows a planned schedule of calls on Supervisors around the country, but when you need him in a hurry, he comes . . . right now. Your schedule is his schedule. He's a good man to know—a thoroughly trained Jordan expert . . . at your service!

O. F. JORDAN COMPANY
Walter J. Riley, Chairman of the Board
EAST CHICAGO 3, INDIANA

JORDAN

SPREADERS ★ DITCHERS ★ SNOWPLOWS



BROS *Sno-Meltr* Casts Snow or Melts it Instantly

Here's the dual-purpose unit that revolutionizes railroad yard snow handling! Patented feeder rakes of the Bros Rotary slash and shatter even the hardest packed snow. Twin rotors whip the disintegrated snow back into the melting chamber. From

a myriad of spray outlets, hot water blasts each snow particle . . . fastest melting you've ever seen! Rear section of tank unit collects the water, can take a load of 19,000 gallons before quick dumping. Entire unit mounts on 70-ton flat car.



Bros revolving casting chutes can be aimed together or separately in any direction, can cast snow 75 to 100 feet away. Special gathering wings increase plowing

width from 9' to 14'. They lift individually to clear platforms, etc. Scarifier cleans down to 3" below rail level. All controls are hydraulic. Write for full information.

Bros Sno-Meltr dual-purpose units have been proved by use on the Great Northern and the Canadian Pacific railroads.

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Association News (Cont'd)

the following days, beginning at 9:30 a.m. each day. The meeting will end at noon on October 22. The president's reception will take place on the first evening of the meeting and the annual dinner on the second evening, both at the Mayflower. The annual luncheon will be held on October 21.

American Railway Engineering Association

Twelve committees have scheduled meetings to be held during the month of September in conjunction with concurrent annual conventions of the Roadmasters' and Maintenance of Way Association and the American Railway Bridge and Building Association, September 13-15, at the Conrad Hilton Hotel, Chicago. These are: Roadway and Ballast, September 13 and 14; Rail, September 13; Track, September 15; Buildings, September 13; Records and Accounts, September 14 and 15; Water, Oil and Sanitation Services, September 15; Yards

Meetings and Conventions

American Railway Bridge and Building Association—Annual meeting, September 13-15, 1954, Conrad Hilton Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

American Railway Engineering Association—Neal D. Howard, Secretary, 59 E. Van Buren street, Chicago 5. Next annual meeting, March 15, 16 and 17, 1955.

American Wood-Preservers' Association—W. A. Penrose, Secretary-Treasurer, 839 Seventeenth street, N. W., Washington 6, D. C.

Bridge and Building Supply Association—L. R. Gurley, Secretary, 201 North Wells street, Chicago 6.

Maintenance of Way Club of Chicago—E. C. Patterson, secretary-treasurer, Room 1512, 400 W. Madison street, Chicago 6.

Metropolitan Maintenance of Way Club—Secretary, 30 Church street, New York.

Mississippi Valley Maintenance of Way Club—P. E. Odom, Secretary-Treasurer, Room 1008, Frisco Building, 906 Olive street, St. Louis 1, Mo.

National Railway Appliances Association—J. B. Templeton, Secretary, Gardner Road, Broadview, Ill.; Lewis Thomas, Assistant Secretary, 59 East Van Buren street, Chicago 5.

Railway Tie Association—Annual Meeting, October 20-22, Mayflower Hotel, Washington, D. C. Roy M. Edmonds, Secretary-Treasurer, 1221 Locust street, St. Louis 3, Mo.

Roadmasters' and Maintenance of Way Association of America—Annual meeting, September 13-15, 1954, Conrad Hilton Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

Track Supply Association—Lewis Thomas, Secretary, 59 E. Van Buren street, Chicago 5

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Economy than
a price tag!**



...look for

• **Quality** • **Durability** • **Efficiency**

The IMPROVED GAUTIER Rail Anchor is made of tough, durable Alloy Spring Steel to give it extra quality, strength, and longer life. Alloy Spring Steel also contributes much to the holding power of the **GAUTIER**, making it one of the most efficient Rail Anchors in use on today's heavily scheduled railroads. It can be used again and again on new or old rail without losing its ruggedness or sure grip. ★ The improved **GAUTIER** is engineered so that it can be installed or removed with maul or spike maul, and so that it can't be overdriven. ★ When you are in the market for rail anchors, may we suggest you look further than the price tag—look to **GAUTIER**—for real economy.

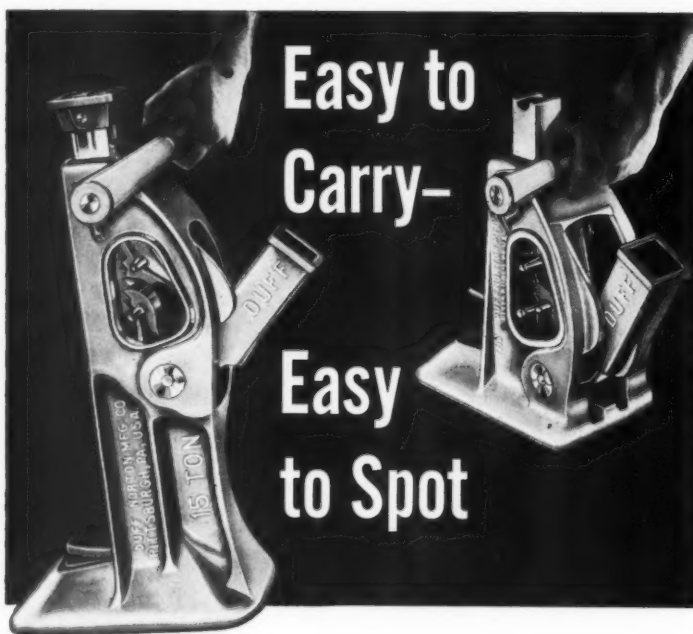


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That's the story on Duff-Norton lightweight aluminum track jacks.

No. 517BA single acting surfacing jack (right) can raise 15 tons, 5 inches, and is twenty-five per cent lighter than a similar jack with a malleable housing. No. 117A single acting track jack (left) can move 15 tons, 13 inches and is thirty-three per cent lighter than its counterpart with a malleable housing.

Safe, rugged, dependable Duff-Norton aluminum track jacks soon pay for their slight additional cost by increased productivity . . . crews can keep pace with fast, modern maintenance equipment.

Get the complete specifications on these and other Duff-Norton track jacks. Write the world's oldest and largest manufacturer of lifting jacks for Track Jack Bulletin AD18-F, The Duff-Norton Manufacturing Co., P. O. Box 1889, Pittsburgh 30, Pa. Canadian plant—Toronto 6, Ontario.

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Jacks

"Giving Industry A Lift Since 1883"

Association News (Cont'd)

and Terminals, September 15 and 16; Contract Forms, September 14 and 15; Economics of Railway Labor, September 15; Waterways and Harbors, September 15; Maintenance of Way Work Equipment, September 13 and 14; and Clearances, September 14.

In addition, the Committee on Highways will meet at the Cleveland Hotel, Cleveland, Ohio, on September 23 and 24, and the Committee on Economics of Railway Location and Operation will hold a meeting at the William Penn Hotel, Pittsburgh, Pa., on September 13 and 14.

Supply Trade News

General

Railroad sales agents have been appointed to represent the **LeTourneau-Westinghouse Company** in two major areas. Appointed to serve the railroads in the St. Louis and southern areas is the **R. E. Bell Company**, St. Louis, Mo. The territory to be served by this company embraces the states of Missouri, Texas, Oklahoma, Louisiana, Mississippi, Kentucky and Tennessee.

J. B. Akers, Jr., Washington, D. C., has been appointed by the company to serve the railroads along the Atlantic seaboard, embracing the area south of Baltimore and including the states of Virginia, North and South Carolina, West Virginia and Georgia.

Personal

Chester A. Sellen, chief metallurgist and assistant to the general manager of the **Reliance Division of Eaton Manufacturing Company**, Massillon, Ohio, has been promoted to assistant general man-



Chester A. Sellen

ager and chief metallurgist of the Reliance Division. A graduate of Ohio State School of Metallurgy, Mr. Sellen joined the Reliance Division on September 1, 1939 as chief metallurgist after having worked in the metallurgical department of the Republic Steel Corporation, Cen-

CUT YOUR TIE-HANDLING COSTS



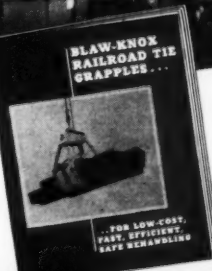
with a BLAW-KNOX Railroad Tie Grapple

You get speedy rehandling! One Blaw-Knox Railroad Tie Grapple unloaded 26 gondola cars of 10,400 ties in 16 hours...that's one way to cut tie-handling costs!

You get these other cost-cutting features . . .

- All-welded construction assures maximum handling capacity for a crane of given size without sacrificing strength.
- Low grapple height (minimum headroom) permits maximum crane reach (operating headroom).
- Fast, safe crane operation results from firm gripping of ties.
- Skilled design permits deep penetration for a full load . . . Blaw-Knox Grapples average 7 to 12 standard ties per grab.
- Safe operation when handling creosoted ties from high side gondolas.

The outstanding performance of these grapples is the result of the collaboration of some of America's leading railroad men and the many years of Blaw-Knox experience in designing and building grapples.



WRITE FOR BULLETIN 2404 TODAY!

It contains full information about the operating and structural advantages of Blaw-Knox Railroad Tie Grapples.

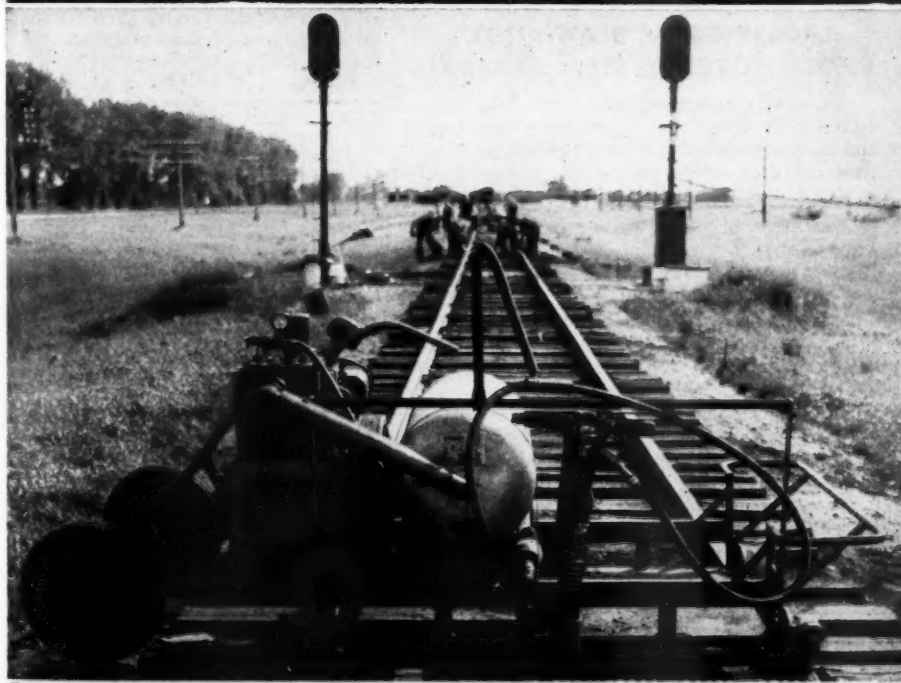
BLAW-KNOX RAILROAD TIE GRAPPLES

BLAW-KNOX COMPANY
BLAW-KNOX EQUIPMENT DIVISION
Department 392
PITTSBURGH 38, PA.
Offices in Principal Cities



WOOLERY

PNEUMATIC . . . SPIKE DRIVER



MEDIUM WEIGHT HARD HITTING

Designed primarily for use by tie renewal gangs. Various other pneumatic tools can also be operated with it when not being used for spike driving. Brakes are automatically applied to 2 of the 4 banded wheels to hold the machine in place when spikes are being driven. When pressure is applied to the push handle the brakes are automatically released and the entire unit rolls easily on roller bearings. Two lever operated pneumatic tire set-off wheels permit removing the unit from the track in less than a minute by two men.

COMPRESSOR: 45 C.F.M. Duplex Cylinder

ENGINE: Wisconsin Twin Cylinder, 13 H.P.

DRIVE: Multiple V-Belt

HAMMER: THOR 60-pound

TANK: A.S.M.E. Standard with Safety Valve

FRAME: All steel, welded

TRACK WHEELS: 6-inch roller bearing

SET-OFF WHEELS: 8" x 4.00 pneumatic-tired, roller bearing

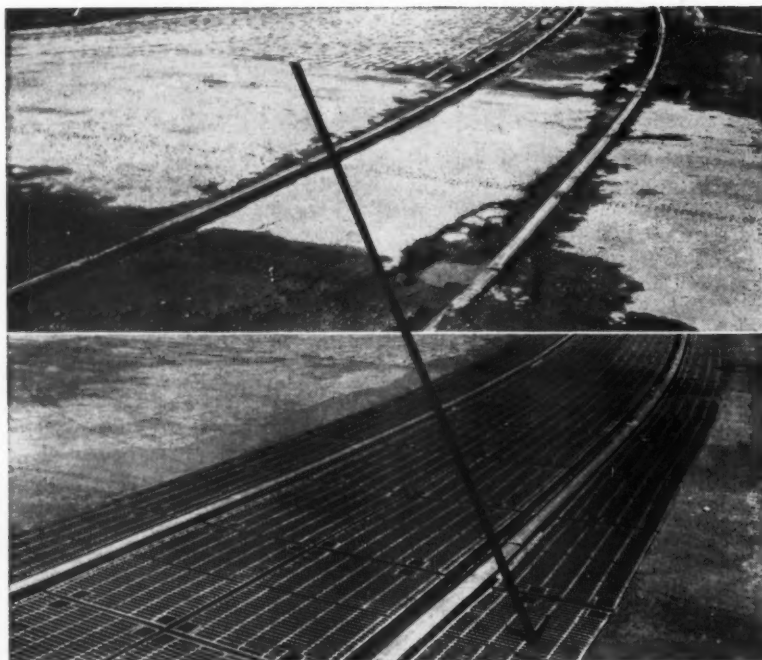
BRAKE: Two-wheel, automatic applied

WEIGHT: 760 pounds

WOOLERY

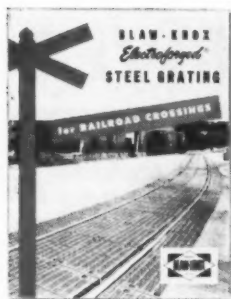
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29th and Como Ave. S.E.
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Pioneer Manufacturers of Railway Maintenance Equipment



Grating by BLAW-KNOX

• builds public goodwill • cuts track maintenance



For more complete information, write for your copy of new Bulletin No. 2448 . . . or send your dimensional sketches for a quotation.

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crossings • walkways •
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versatile steel grating.



BEFORE—a crossing that was harmful to vehicles, dangerous to pedestrians, an eyesore to the community.

AFTER—a crossing that is modern, smooth, safe, a builder of public goodwill.

CROSSINGS OF BLAW-KNOX ELECTROFORGED® STEEL GRATING

—are easily installed and maintained—
takes only two men to remove sections
for tamping tracks, cleaning ballast, re-
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—provide good drainage, permit quick
evaporation of snow and water, are easily
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BLAW-KNOX EQUIPMENT DIVISION GRATING DEPARTMENT

Supply Trade News (Cont'd)

tral Alloy Division, for 10 years. In October 1950 he was appointed chief metallurgist and assistant to the general manager of the Reliance Division.

Louis T. M. Ralston, president of **Industrial Brownhoist Corporation**, Bay City, Mich., has also been elected president of "Quick-Way" Truck Shovel Company, Denver, Colo. Both companies were recently acquired as wholly owned subsidiaries of **Penn-Texas Corporation**. **Wilson H. Madden** has been appointed vice-president and general manager of "Quick-Way."

W. C. Runnstrom, formerly president of the **Matisa Equipment Corporation**, has announced the organization of the **Camef Equipment Corporation**, with headquarters in the Railway Exchange Building, 224 S. Michigan Ave., Chicago. The new company, of which Mr. Runn-



W. C. Runnstrom

strom is president, will act as railroad sales representatives in the United States for domestic and foreign manufacturers. It has also been announced that the new



James R. Harwood, sales engineer for the **Tranco Division** of the **LeRoi Company**, has been named sales manager at **Milwaukee, Wis.** Mr. Harwood was a district representative for the construction and Mining Division before joining the **Tranco Division** late last year. In his new capacity, he will be responsible for the firm's nationwide dealer network and field personnel.

THE RAILROAD "CAVE MAN" IS VANISHING ...



Propane Switch Heaters Are Taking Over


The shanties or dugouts at isolated switches along the line—together with brooms and oil drums—are becoming relics of the past—thanks to remote-controlled RAIL-TEL Switch Heaters. Taking the place of the sentry at these lonely outposts is an alert towerman, perhaps 50 miles away, who can turn on the propane-fed heaters at the first sign of snow. *That's progress!*

RAIL-TEL Switch Heaters, whether operated by manual or remote control, keep switches free of snow and ice under all conditions. Many railroads are using these proved heaters for the economical and dependable protection of both isolated switches and all types of interlocking plants—at a substantial return on the investment.

Now is the time to plan for economical, unhampered operation next winter. We will gladly furnish operating costs and other details. *Write today.*



From coast to coast track engineers get



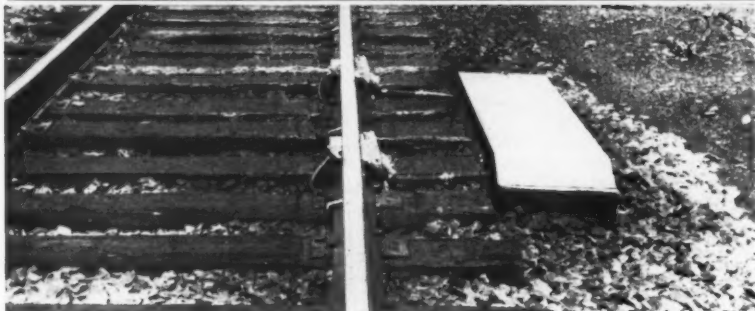
Better Curves
with the
A.R.C. "CURVELINER"

SAVING
thousands of
lining gang
man-hours

AMERICAN RAILROAD CURVELINING 625 MADISON AVE., NEW YORK

Logos for various railroads: L&N, NEW YORK CENTRAL SYSTEM, OTTOM BELT ROUTE, MISSOURI PACIFIC LINES, THE NEW YORK NEW JERSEY HARTFORD RAILROAD CO., CANADIAN NATIONAL RAILWAYS, Lackawanna Railroad, SPOKANE PORTLAND SEATTLE, THE CLINTONFIELD ROUTE, THE MONTELEONE RAILWAY, ALICIA CENTRAL RAILWAY, N.C. & S.T., SEABOARD RAILWAY, KANSAS CITY SOUTHERN LINES, Santa Fe, UNION PACIFIC, ILLINOIS CENTRAL, L.A. & R., THE BAY LINE, Rock Island, TAG, THE WEST POINT ROUTE, THE ATLANTIC COAST LINE, CENTRAL GEORGIA, FRISCO LINES.

M & S LUBRICATORS



For Efficient—Economical Rail and Flange Lubrication

The M & S Rail and Flange Lubricator offers advantages found in no other lubricator—the result of 22 years' experience in rail lubrication. Combines simplicity of design with rugged construction insuring economical year in—year out rail lubrication. Maintenance, other than filling the tank with oil, is rarely necessary. The efficient design with automatic lubrication of the two moving parts in each plunger block, results in long trouble-free service life. Easy installation—no rail drilling—no tie spacing. *Note these down-to-earth prices:* Unit as shown above—\$298.00. Single plunger unit—\$166.50. Write for complete details.

MOORE & STEELE CORPORATION
OWEGO, TIOGA COUNTY, N. Y.

Supply Trade News (Cont'd)

company will be the representative in the United States for a number of associate companies being established to serve the railroad industry in various South American countries. The first, known as Compañia Anonima Materiales y Equipos de Ferrocarriles, has been established in Venezuela with offices at Caracas.

Charles E. Barnes, formerly sales manager for the **Griffin Wheel Company**, has been appointed special railroad representative for **Templeton, Kenly & Co.**, with headquarters at 55 New Montgomery St., San Francisco, Calif.

C. L. Thompson has been appointed sales manager of the material handling division of the **Buda Company**, a division of **Allis-Chalmers Manufacturing Company**.

Carl F. Weiblen, sales engineer for the **Blaw-Knox Company**, Pittsburgh, Pa., has been transferred to Chicago.

Ray J. Dervej has been promoted to general sales manager of the **American Hoist & Derrick Co.**, St. Paul, Minn., succeeding **John E. Carroll** who was named president of the company. Mr. Dervej, a native of St. Paul and a graduate of the University of Minnesota, started his business career as a production engineer for **United States Steel Corporation**. During World War II he served in the U. S. Army for five years,



Ray J. Dervej

rising to the rank of major. In 1945 Mr. Dervej entered the service of American Hoist, serving in the industrial equipment division at the St. Paul sales office. He was promoted to district manager in 1946, in which capacity he took charge of the Pittsburgh office and territory.

Obituary

Charles A. Crane, former engineering chief of **Templeton, Kenly & Co.**, died July 21 at the age of 73. Mr. Crane had been connected with the company for virtually his entire business career, starting with its formation in 1899. He was a former member of the board of directors and had been a member of several Chicago engineering societies.



R.T.W. HYDRAULIC TRACK LINER MODEL P-O

The Model P-O Hydraulic Track Lining Unit consists of two Hydraulic Rams and a portable power plant, which is mounted on two double flanged rollers, supported by a hinged bracket support to stabilize machine on the rail.

Hydraulic Pump is driven by a Six Horsepower Air Cooled Gasoline Engine.

When lining freshly raised track, one ram is sufficient. When lining thru switches, road crossings or heavy curves, it may be necessary to use both rams. This will depend entirely upon existing conditions, or the judgment of the foreman in charge of the job.

The machines in service are operated with five laborers and one foreman; one man at machine, one man on each ram and two men digging out the cribs to set the ram.

SPECIFICATIONS

Length 54" Width 24"
Height 30" Weight 275 lbs.

Write today for complete information
on the Hydraulic Track Liner—Model P-O

Railway Trackwork Co.

3207 KENSINGTON AVE., PHILADELPHIA 34, PA.

RAIL GRINDERS, SWITCH GRINDERS,
CROSS GRINDERS, SURFACE GRINDERS, RAIL DRILLS, BALLAST EX-
TRUDERS, BIT SHARPENERS, TIE NIPPERS, GRINDING WHEELS,
CUT-OFF WHEELS, TRACK LINERS, BRUSHMASTER SAWS



Van-Packer Chimney installed on railroad car repair track building

Packaged Masonry Chimney Goes Up in 3 Hours or Less On Railroad Buildings

LOW COST—The Van-Packer Packaged Masonry Chimney is easily installed in 3 man hours or less as new chimney or replacement of smoke jacks on car repair track buildings, maintenance of way buildings, small diesel repair shops, small passenger stations and freight home office buildings. Section-on-section design makes installation a one man job. Never needs to be replaced. Saves 30% to 50% over brick chimney construction.

34% MORE DRAFT—Can be specified wherever 8" x 12" standard code brick chimneys are used. Develops 34% more draft than brick chimneys, cuts fuel bills.

SAVES SPACE—Ceiling suspended Van-Packer can be placed directly over heating unit, no wasted space. Chimney is supported with 4X factor of safety. Fire-safe, no clearance to wood rafters is necessary.

APPROVED FOR ALL FUELS—Time-tested masonry construction withstands temperatures in excess of 2100° F. Sections have insulating value of 24" solid brick wall. Listed by U.L., A.G.A. for all fuels. Delivered packaged and complete, all parts provided.



Triple connection to ceiling suspended chimney inside railroad car repair track building

At right is an exploded view of the Van-Packer Packaged Masonry Safety Chimney. Illustration shows section-on-section construction for ease of installation, even after building has been completed.



Phone, write or mail the coupon
below for all the facts on the



Van-Packer

**Packaged Masonry
Safety Chimney**

Brice Hayes Company

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Send me full facts on
Van-Packer Chimney for
railroad buildings.

FREE LITERATURE

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City

State



The TIE-SAVER Track Pad
DOUBLE-U Rail Anchor Spring Washers for Track
Achuff Railway Supply Co.
5627 Manchester Ave. St. Louis 10, Mo.

Manufacturers' Literature

Following is a compilation of free literature, pamphlets, and data sheets offered by manufacturers to the railroad industry and advertisers in this issue (items #12-20). Circle the number(s) on the coupon below to receive the information desired; the requests will be sent direct by the manufacturers.

1. **TORQUE-CONTROL CRANES.** *Orton Crane and Shovel Co.* 16-page 2-color catalog (87) describes the Torque-Control unit in detail, and its use in the Aero (rubber-tired) cranes and the Powermatic (crawler) cranes. To receive catalogs 84 (on the railroad crane) and 85 (on the Aero-Crane), write numbers on coupon below.
2. **FLOWTROL VALVE.** *Golden-Anderson Valve Specialty Co.* 8-page technical bulletin (W8-A) describes and outlines the Golden-Anderson Cushioned Flowtrol Valve with cartoons and diagrams.
3. **ALLOY STEEL.** *Jones & Laughlin Steel Corp.* 8-page pocket-sized leaflet (AD 182) completely describes Jalloy Grade 3, a special alloy steel for heavy duty use, gives properties, composition, applications, case histories and heat treatment data.
4. **HEATING SYSTEMS.** *Illinois Engineering Co. Div. Amer. Air Filter Co.* 20-page bulletin (110) catalogs the complete line of heating systems and controls, and steam specialties, including the 5 major types of steam heating system and a full line of valves and traps.
5. **METAL-PROTECTIVE PROCESS.** *American Chemical Paint Co.* 4-page folder (1241) completely describes, illustrates, and lists suggested applications for Alodine No. 1200, "the ACP metal-protective process that enhances aluminum's natural corrosion-resistance and improves its paint bonding properties."
6. **HAND TORCHES.** *Air Reduction Sales Co.* 36-page catalog (#818) "Hand Torches For Gas Cutting and Welding" covers the complete Airco line of torches and tips for oxyacetylene cutting and welding, including mixers, extensions, adapters and accessories.
7. **AIR POWERED SCREW DRIVER.** *Ingersoll-Rand.* 20-page ready reference bulletin (5056A) "Production Payoff" describes, illustrates and gives specifications for I-R air powered screw drivers, with a number of on-the-job applications shown.
8. **TERMITE-PROOF CABLE.** *The Okonite Co.* 4-page 2-color bulletin (1086) describes, illustrates and lists advantages of Okonite's new CB-OT cable, the lightweight cable for direct burial and other applications, particularly suitable for railroad signal and power circuits.
9. **CELITE FOR FINISHES.** *Johns-Manville.* 16-page 2-color folder (FA-47A) "Johns-Manville Celite Flattening Agents and Pigment Extenders" covers general advantages and gives detailed data on Celite use in nine basic types of finishes, with typical formulations.
10. **ARC WELDING ELECTRODES.** *Metal & Thermit Corp.* 30-page catalog gives complete details with application and procedure data on all Murex mild steel and low alloy arc welding electrodes.
11. **PUMPS & COMPRESSORS.** *Worthington Corp.* "Trouble Savers" mailer series on preventive maintenance to reduce operating costs offered; (L-676-M1) Vertical Water Cooled Air Compressors; (PC-305) Centrifugal, Rotary, Regenerative Turbine and Steam Pumps; (PC-306) Air-Cooled and Water-Cooled Air Compressors; and (V-1400-M39) V-Belt Drives. (Write-in mailer number(s) on coupon below).
12. **RUBBER-WHEELED PULLER.** *LeTourneau-Westinghouse Co.* 20-page booklet "The Railroad Handyman" shows how the 7-yard self-loading D Tournapull cuts time and costs on right-of-way maintenance.
13. **JACKS.** *Templeton, Kenly & Co.* Bulletin (RR52) gives complete information, illustrates and gives specifications for the Simplex line of jacks, including track jacks, hydraulic jacks and rail expanders.
14. **BITUMINOUS MIXERS.** *Kwik-Mix Co.* Literature offered on the 10 and 14 cu. ft. Kwik-Mix bituminous mix plants, gives complete details, specifications and typical applications.
15. **SNOW BLOWER.** *Ramapo Ajax Div. Amer. Brake Shoe Co.* Descriptive literature offered giving complete details and uses of the Racor snow blower, as shown in Ramapo ad in this issue.
16. **RAILROAD TIE GRAPPLES.** *Blaw-Knox Co.* Bulletin (2404) contains full information about the operating and structural advantages of Blaw-Knox Railroad Tie Grapples.
17. **STEEL GRATING.** *Blaw-Knox Co.* Bulletin (2448) gives complete detailed information with typical uses shown of Blaw-Knox Electroforged Steel Grating for railroad crossings.
18. **JACKS.** *The Duff-Norton Manufacturing Co.* Bulletin (AD18-F) gives complete information and specifications for the Duff-Norton line of lightweight aluminum track jacks.
19. **RAIL TOOLS.** *Racine Hydraulics & Machinery, Inc.* Folder offered gives details and illustrates the complete Racine line of rail tools.
20. **CHEMICAL WOOD PRESERVATIVE.** *The Dow Chemical Co.* Plant Wood treating specifications, booklet "Pointers on Penta," and sources of treated wood offered by Dow as described in ad in this issue.

Reader Service Department

Railway Track and Structures

30 Church Street, New York 7, N. Y.

SEPTEMBER, 1954

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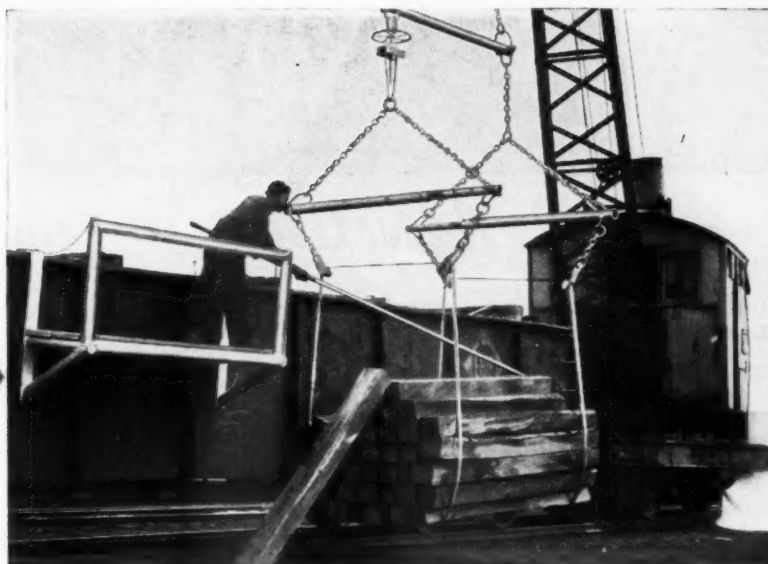
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BRAINARD'S new system of tie handling is now in use on seven major roads, where it is cutting costs up to 30%. Plans for the special patented lift are available free of charge to railroads and tie-treating plants for production in their own shops.

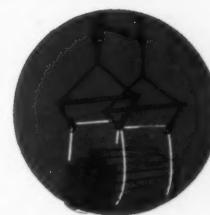
Call your local Brainard salesman now—for a study of your operations and recommendations. District offices located throughout the U. S.

For booklet write Brainard Steel Division, Sharon Steel Corp., Dept. S-9, Griswold Street, Warren, Ohio.



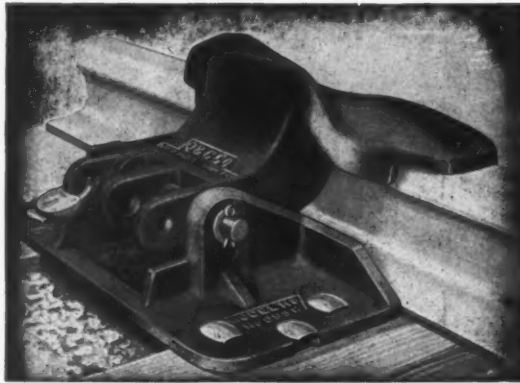
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COMPLETE STEEL STRAPPING SYSTEM, ENGINEERING, STEEL STRAPPING, TOOLS AND ACCESSORIES, ANTI-CHECKING IRONS



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can help you
cut tie-handling
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REDUCE INVENTORIES BY USING Q AND C DERAILS



Q and C Hand Throw Derails are of simple design durable and effective. They may be adjusted in the brackets to fit a range of rail sections, eliminating the necessity of carrying many sizes in stock, thus reducing inventories.

We also manufacture Sliding Type and Portable Derails, likewise adjustable for many sizes of rail. Specify Q and C Derails to insure safety and economy.

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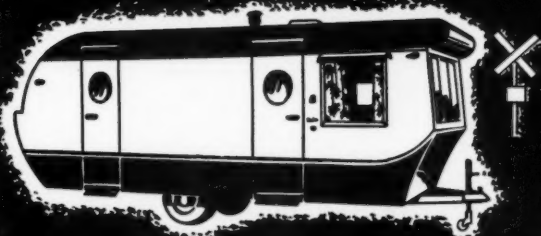


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ST. LOUIS 1

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RICHARDSON mobile units furnish an economical way to house repair crews, keeping repair trains off the road. These mobile units sleep crews comfortably. Many railroads have found the use of these **RICHARDSON** units a practical and convenient manner in which to move crews from place to place.

For complete information and prices write directly to the **RICHARDSON** factory.

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TRAILER MFG. CO., INC.
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Lewis sealtite railroad fasteners

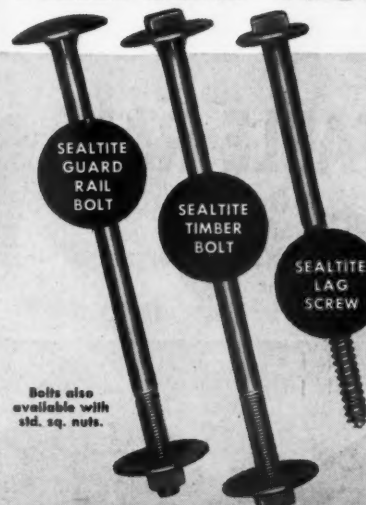
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Sealtite products sealed in zinc give twice the wear and greater economy by cutting expensive replacements. For Double-Life and freedom from corrosion, specify Hot-Dip Galvanized . . . Sealed in Zinc

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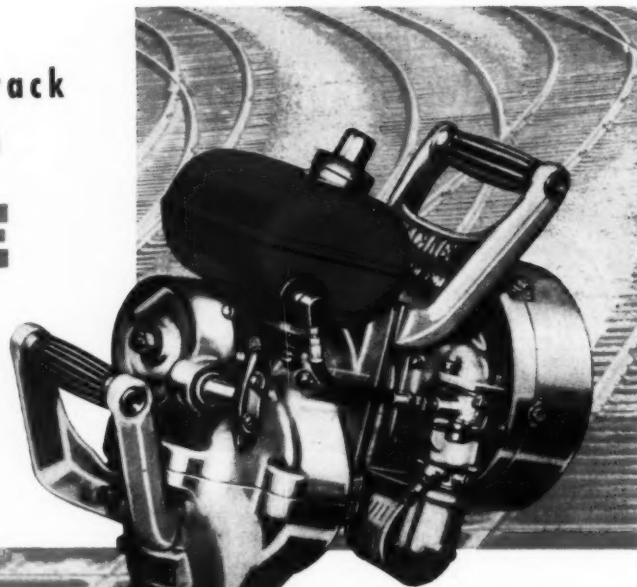
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maintenance costs with

RACINE PORTABLE RAIL TOOLS

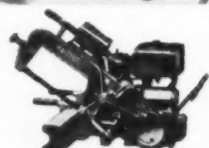


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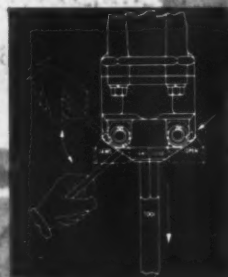


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Fast — Accurate — Lightweight



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Lightweight — Automatic Power Feed

QUICK OPENING
TOOL CHUCK



RACINE

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Greatly improved modern trains run smoothly over the finest laid

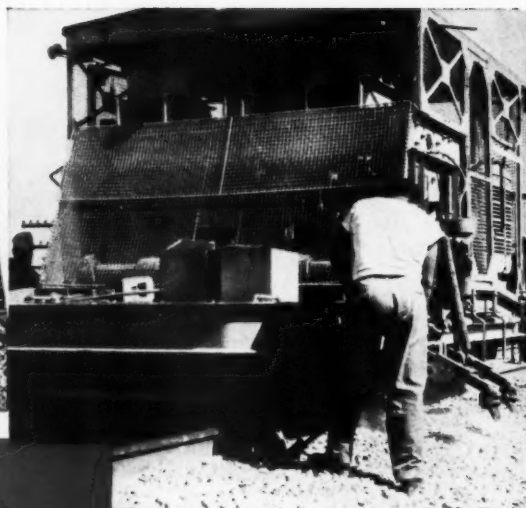
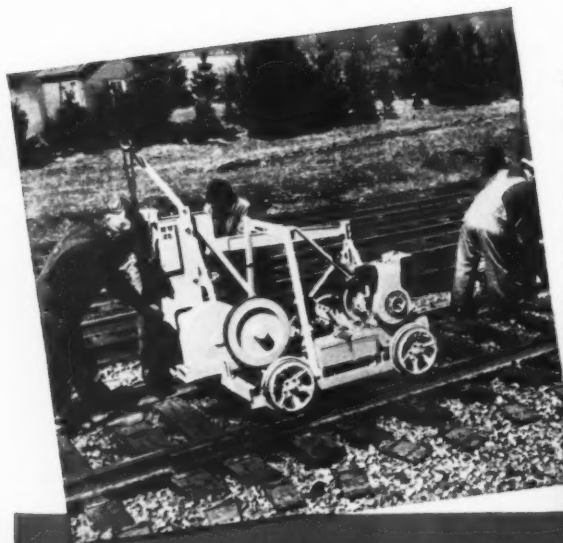
track in the world; and one seemingly small but very important factor is the widespread use of tremendously powerful spring washers that secure the bolts and rails, — absorbing shocks, equalizing tensions, protecting rail ends, etc.



Southern Pacific Photo

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A COMPLETE LINE OF RAILWAY SPRING WASHERS



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SAN FRANCISCO ★ ST. PAUL ★ ST. LOUIS ★ ATLANTA



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IN ALL
48 STATES

